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CONTENT OF AIR FORCE INSTITUTE OF
TECHNOLOGY COURSE CON 331 AS
DETERMINED BY EXPERTS IN THE FIELD:
A CONTRACTING SURVEY ANALYSIS USING
THE DELPHI TECHNIQUE

THESIS

Michael L. Grove, BS Eddie L. Upshaw, MA

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CON 331 AS DETERMINED BY EXPERTS IN THE FIELD:
A CONTRACTING SURVEY ANALYSIS USING THE
DELPHI TECHNIQUE

THESIS

Presented to the Faculty of the School of Logistics and
Acquisition Management of the Air Force Institute of Technology
Air University
In Partial Fulfillment of the
Requirements for the Degree of
Master of Science in Contracting Management

Michael L. Grove, BS

Eddie L. Upshaw, MA

September 1993

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Michael L. Grove

Eddie L. Upshaw

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Abstract

The goal of this research effort was to determine recommended topics to be taught in the Air Force Institute of Technology Professional Continuing Education course CON 331 - Executive Cost and Price Analysis. This determination of course content was necessary due to the changes required by the implementation of Department of Defense Directive 5000.52-M, "Career Development Program for Acquisition Personnel." The determination was accomplished by developing a list of suggested topics and surveying a panel of six Government pricing executives, managers, and experts via the Delphi method. Kendall's Coefficient of Concordance test was utilized to determine the significance of agreement between the experts. Using this methodology, a consensus was reached on a prioritized list of 25 topics. In addition, recommendations for specific areas of study relating to a topic were received for 14 topics. The consensus list of prioritized topics and the recommended subtopics constitute our determination of content for CON 331 - Executive Cost and Price Analysis.

CONTENT OF AIR FORCE INSTITUTE OF TECHNOLOGY COURSE CON 331
AS DETERMINED BY EXPERTS IN THE FIELD: A CONTRACTING SURVEY
ANALYSIS USING THE DELPHI TECHNIQUE

Chapter I

Background and Statement of the Problem

General Issue

Since World War II, each presidential study reviewing the problems within the field of acquisition has cited the need for a better trained, more professional workforce (Pursch 1992). Specifically, the President's Blue Ribbon Commission on Defense Management, better known as the Packard Commission, stated

Federal regulations should establish business related education and experience criteria for civilian contracting personnel, which will provide a basis for the professionalization of their career paths (Presidents Blue Ribbon Commission 1986:27).

To address these concerns, Congress passed Chapter 37 of Title 10, United States Code, and the Department of Defense (DOD) issued DOD Directive 5000.52, "Defense Acquisition Education, Training, and Career Development Program", and 5000.52-M, "Career Development Program for Acquisition Personnel", which implemented the law as well as consolidated several DOD regulations and directives relating to education for acquisition personnel (DOD 1991:i). Hence, the Undersec-

retary of Defense for Acquisition has directed the establishment of appropriate education, training, and experimental programs and prerequisites that will enable acquisition personnel to obtain the level of education and experience required for their assignments and responsibilities.

To provide appropriate education, training, and experience, each specialty within the acquisition career field (e.g. program management, contracting, etc.), was reviewed by the Department of Defense and specific education and experience requirements were established for entry (Level I), journeyman (Level II), and managerial and executive (Level III) personnel (DOD 1991:2-1). Various Air Force Institute of Technology (AFIT) Professional Continuing Education (PCE) departments are conducting studies to determine how well the PCE courses meet the needs of the acquisition professionals and how to improve the various courses.

Specific Problem

In order for an acquisition official in the Pricing career field to receive Level III certification, they must successfully complete the AFIT PCE course CON 331 - Executive Cost and Price Analysis. The current objective of the course is to provide the journeyman price analyst with training to improve their technical skills and increase their technical level of competency. Comments from pricing managers and executives who have recently taken the course have raised

concerns regarding the usefulness and applicability of the course as currently structured. Therefore, this research addresses the following problem: Now that CON 331 is required for Level III certification for pricing managers and executives, what changes in the course curriculum need to be made to meet the needs of current and future contracting managers?

Investigative Questions

In order to resolve this specific problem, we identified the attributes of the current course offering, including personnel who are required to take the course. This provided a baseline for recommending changes to the course. After this information was identified about the current course, recommendations as to what topics need to be taught in future courses were provided. This thought process led to the following specific investigative questions that were answered.

1. Who is presently required to take the course?
2. What are the current course objectives and content?
3. What specific topics represent the needs of the people who are required to take the course?

Scope and Limitations

This research addressed only the education program for pricing executives and managers in the contracting career path as set forth in DOD 5000.52M "Career Development Program for Acquisition Personnel".

Definitions

To allow for a common basis of understanding, definitions of the following terms are provided.

Expert. The expert is one who has a knowledge of the problem area, has a good performance record in his area of expertise, has a high degree of objectivity and rationality (Tersine and Riggs, 1976:53-54), is broadly representative of the population that is being assessed, and, using Mary Parker Follett's (1924) definition of expert: "has experience in the organization and who therefore knows more about life inside the organization than anyone on the outside" (Ciskishin and Joseph, 1991:298).

Pricing Executive or Manager. Any individual in the contracting career field (GS-1102 and comparable military) who has the grade of GS/GM-13 or above or the rank of O-4 or above and holds a job that is "primarily cost and price analysis oriented" (DoD 1991: B.1-5).

Course Curriculum. Those topics, subtopics, and points of emphasis that comprise the subject matter to be taught during the class sessions.

Needed Topics. Areas of expertise or knowledge required for a person to adequately perform the job of a pricing executive or manager.

Pricer, Price Analyst, or Cost and Price Analyst. An individual who reviews and evaluates "the separate cost elements and proposed profit of (a) an offeror's or contractor's cost or pricing data and (b) the judgmental factors applied in projecting from the data to the estimated costs in order to form an opinion on the degree to which the proposed costs represent what the cost of the contract should be, assuming reasonable economy and efficiency" (48 CFR 15.301).

Thesis Overview

This thesis is composed of five chapters. This chapter provided a detailed statement of the problem of revising a training course for pricing executives and managers, described how the problem arose, and provided the background information associated with the problem. Chapter II reflects the results of the literature review conducted in order to answer investigative questions one and two and delineates the thought process used to develop the method for selecting course topics. In Chapter III we explain and justify the research design and methodology by providing in detail the rationale for using the selected research methodology as well as describing the exact procedures used throughout the research. Chapter IV describes the results obtained by follow-

ing our research design and presents an analysis of the results. Finally, Chapter V summarizes the research effort, provides conclusions based upon the research results, and describes recommendations for future studies relating to this research.

Chapter II

Literature Review

Introduction

In this chapter, the need for training for pricing executives and managers is explored. The population currently required to take the executive pricing course is described and the topics covered in the current course are delineated. This discussion answers the first two investigative questions (the third investigative question is addressed in Chapter III). Finally, an appropriate method for selecting topics for an academic course is explained.

Education Requirement Established

Continuing education and training is required for all executive and management personnel if they are to remain effective and efficient (Palmer 1972: 398; Koval 1971: 56; Floyd 1990; and others). The President's Blue Ribbon Commission on Defense Management recommended that the Department of Defense provide better training for professionals in the acquisition career field (President's Blue Ribbon Commission, 1986:27). In response, the Department of Defense designated mandatory Professional Continuing Education (PCE) courses for each of three levels -- basic level (Level I), intermediate level (Level II), and senior level (Level III) personnel --

for each acquisition career field (DOD 1991:2-1; Carlton 1989: Chapter I). To determine how well the AFIT PCE course CON 331 meets the needs of the personnel required to take the course, investigative questions 1 and 2 were addressed during the literature review.

Investigative Question 1 -- Who Is Presently Required to Take the Course?

Level III certification is required for any GS/GM 13 and above or O4 and above in the acquisition career field (DOD 1991:2-1). DOD Directive 5000.52M, "Career Development Program for Acquisition Personnel," identified the acquisition career field to include the following specialties: program management; communications computer systems; contracting; purchasing; industrial property management; systems planning research, development, and engineering; test and evaluation; manufacturing and production; quality assurance; acquisition logistics; business, cost estimating and financial management; and auditing (USD(A) 1992: ii).

The contracting specialty (GS-1102 and comparable military) includes the title designators of Contract Negotiator, Contract Specialist, Contract Termination Specialist, Contractor Administrator, Procurement Analyst, Administrative Contracting Officer, Contract Price and/or Cost Analyst, Contracting Officer, Procuring Contracting Officer, and Termination Contracting Officer (DOD 1991: B.1-1).

WQMT 540 -- "Advanced Contract Pricing" has been designated as a training requirement for Level III certification for Contract Price and/or Cost Analysts in the acquisition career field specialty of contracting. The Defense Acquisition University renamed WQMT 540 to CON 331 -- "Executive Cost and Price Analysis" (USD(A) 1992: 21).

Accordingly, to obtain certification, any individual in the acquisition career field specialty of contracting (GS-1102 and comparable military) who has the grade of GS/GM 13 or above or the rank of O-4 or above and holds a job that is "*primarily cost and price analysis oriented*" is required to have completed CON 331 -- "Executive Cost and Price Analysis" (DOD 1991: B.1-5).

Investigative Question 2 -- What Are the Current Course Objectives and Content?

The current course -- CON 331, formerly WQMT 540 -- was developed in the early 1980's to address specific problems being experienced at that time and was directed toward "journeyman working analysts" rather than managers and executives (Daneman 1993). The objectives of the course, as reflected in the current course description are to "Provide experienced procurement analysts with statistics and accounting tools necessary to analyze costs, establish cost estimating relationships, and develop reasonable cost estimates in large system procurements" (AFIT 1989: 201-202). Topics in

the current course include the impact of unallowable pool and base costs on overhead allocation, probability and decision analysis, tracking actual costs to estimated costs to ascertain bias, and risk analysis and production quantity. The course was not originally designed to meet the needs of pricing executives and managers.

Need to Review Curriculum.

With the change in clientele for CON 331 due to the Level III certification requirements and the current course objectives and content structured around the journeyman price analyst, comments on the "End of Course Critique" reflected a growing dissatisfaction in the course content which was not evident in previous years' critiques (Daneman, 1992). Brown found that with a change in doctrine, the educational program for logistician executives needed to be changed to meet the new requirements (Brown, 1990). Accordingly, the research of this thesis is focused on determining the topics that best fill the educational needs of those required to complete CON 331 for Level III certification.

An Approach for Selecting Topics for Course Design

A thorough review of available literature revealed nothing that set forth curriculum to train pricing executives and managers. Notwithstanding, several items have been written for entry and intermediate level pricers (AFIT 1989;

Crumbie and Willis 1990)), as well as for executives in other, closely related fields such as accounting and business administration (Palmer 1972: 398; and Reeve and Jensen 1972: 346). Some sources suggested that the nature of such a course should be only to update the trainees on law and regulatory changes (JFMIP 1990). However, that purpose is fulfilled by an annual seminar required of all pricing chiefs and by another mandatory course in the contracting curriculum, CCN 301 "Executive Contracting" (USD(A) 1992: 21). Accordingly, the nature of a pricing course for managers and executives is more similar to a collegiate course with a well defined and timely curriculum covering specific topics.

Delphi Discussion. While there exists an abundance of data concerning managerial and executive training in general, no relevant data exists concerning specific, topical educational needs for pricing executives and managers. Considering the extant condition, this research must be exploratory in nature. Whenever insufficient or no applicable data exists the Delphi method is considered an appropriate methodology (Zaloom 1974: 32). This method not only permits the gathering of information, but also provides for information to be gathered from the people affected by the results, the "customer". This customer input is, in our opinion, vital and though highly touted by the professional educational establishment, is rarely used in curriculum development. Prior research on the use of the Delphi method in education

needs assessment and curriculum design support the use of no more than three iterations, and also support the use of both a Likert scale and a ranking process to establish the relative importance of the various topics. (Olshfski and Joseph 1991: 297; Weaver 1988: 18; Martin and Chaney 1993: 267). Based on this prior research, the Delphi technique was used to answer investigative question 3 as described in the next chapter. A more detailed discussion of the Delphi method is provided in Appendix A.

Summary

This chapter reviewed pertinent literature regarding the requirement for executive education in general and the DCD's "Executive Cost and Price Analysis" Course. Two of the investigative questions were answered: Who is required to take the course? and What topics are covered in the current course? Finally, based on the literature review, the Delphi method was selected as the appropriate methodology to determine the topics needed for CON 331. In the next chapter, the methodology used in selecting the required topics is discussed in detail.

Chapter III

Methodology

Overview

The objective of this chapter is to thoroughly explain and justify our research design and methodology used to answer Investigative Question 3. A brief summary of the problem is presented followed by the detailed methodology, description, and justification of how we answered this specific investigative question.

Problem Summary

In order to address the problem of revising the course curriculum for CON 331 - Executive Cost and Price Analysis, the following investigative questions must be answered.

1. Who is presently required to take the course?
2. What are the current course objectives and content?
3. What specific topics represent the needs of the people who are required to take the course?

Investigative Questions 1 and 2 were answered in Chapter II, Literature Review. Specifically, Question 1 (Who is presently required to take the course?) was answered by reviewing DOD Manual 5000.52-M, "Career Development Program for Acquisition Personnel", November 1992 and Question 2 (What are the current course objectives and content?) by

reviewing the present course syllabus and curriculum and by interviewing the course director. The third investigative question will be answered via a questionnaire methodology using the Delphi technique as described below.

Question 3 Methodology

Question 3 (What specific topics represent the needs of the people required to take the course?) was answered using a questionnaire methodology utilizing the Delphi technique. The questionnaire method resulted in a list of the most needed topics for CON 331 which, in turn, served as the basis of the revised curriculum.

Description of Delphi -- When to Use and Current Application. The Delphi technique is a decision making aid that elicits a consensus judgment or opinion from a panel of experts through an iterative questionnaire and feedback process. The method is most useful whenever insufficient or no applicable data exists, the required data is too expensive to obtain and analyze, or the significant problem variables and their interaction are not clearly known (Zaloom, 1974:32). A more detailed description of the Delphi technique is provided in Appendix A.

While there exists an abundance of data concerning managerial and executive training in general, as well as numerous studies in specific areas, e.g., training needs for accounting executives and managers; as indicated in the

previous chapter, no relevant data exists concerning specific, topical educational needs for pricing executives and managers. The most appropriate methodology for this purpose is deemed to be the Delphi technique (Olshfski and Joseph, 1991:297). The Delphi technique requires the determination and selection of experts.

Requirements of Experts and Current Panel Selection.

The size and composition of the panel of experts, as well as the nature of the questionnaires and method of tabulation, varies among areas of use. The experts must have knowledge of the problem area, have a good performance record in their areas of expertise, have a high degree of objectivity and rationality, and commit the time required for the study (Tersine and Riggs, 1976:53-54). For education needs assessment, the experts should also be broadly representative of the population that is being assessed, and have experience in the organization and therefore know more about life inside the organization than anyone on the outside (Olshfski and Joseph, 1991:298).

Since the problem of identifying training topic requirements for pricing managers and executives is narrowly defined, a relatively homogeneous panel was required. Therefore, this study employs a panel of six experts. The experts were chosen based on each experts current position, our personal judgements, and the judgements of our thesis advisors. Table 3.1 reflects the positions held and organiza-

tions represented by the experts. (To assure anonymity, the list of positions and organizations are not presented in a one-to-one correspondence.)

TABLE 3.1

POSITIONS AND ORGANIZATIONS OF EXPERT PANEL

<u>Position Title</u>	<u>Organization</u>
Chief, Price/Cost and Financial Analysis Branch	ASC
Chief, Pricing Division	SM-ALC
Director, Pricing and Finance	SAF
Chief, Contract Review and Pricing Division	OC_ALC
Staff Price Analyst	HQ, DLA
Supervisory Contract Negotiator	HQ, AFMC

The experts are all DoD civilian employees in grades GS/GM 14-15 and represent a combined total acquisition experience base in excess of 130 years.

The panelist supervise, or establish contract pricing policy for those whom the course is required. Three experts represent staff positions and three should represent buying or field positions. Price analysts in staff positions are concerned with the regulations affecting the buying positions and with problems which go up through channels to the staff for action. Buying or field cost and price analysts support Contracting Officers by performing cost analysis and leading in price negotiations in large dollar purchases or contract modifications and by completing other related pricing tasks assigned by the agency.

Two of the experts have extensive contract administration experience. Four of the experts have extensive purchasing experience. Two of the experts directly represent the customer of the cost and price analyst, the Contracting Officer. Four of the six experts are in positions that require them to take the course. All of the experts are required to take the course if they are to receive their Level III certification in the pricing career field.

Based upon the results of who is presently required to take this course and discussions with our thesis advisors, we believe that the above described experts constitutes a panel of experts qualified to recommend topics to be covered in a course for Level III certification for pricing managers and executives. This mix of experts ensures that all aspects of pricing management are represented, that the population of individuals who are required to take the course are represented, and that there is a high degree of customer input.

Use of Delphi in Educational Needs Assessment and Curriculum Design. Miles Weaver (1988:18), and Dorothy Olshfski and Alma Joseph (1991:297) advocate the use of the Delphi technique in training need assessment and curriculum design. Both listed potential topics and asked the panelists to indicate the relative need of each. Weaver used a Likert type scale and used a simple mean of the scores for the individual topics to establish the ranking of the topics from

most important to least important. Olshfski and Joseph asked the panel to rank the topics from most important to least important and then summarized the responses to obtain a composite ranking. The summaries were sent back to the experts for comment and reconsideration. The iterative process continued until a consensus was reached concerning the most important topics to be covered in subsequent training courses. Each researcher solicited additional topics beyond those listed on the first questionnaire and neither researcher required more than three iterations before a consensus was obtained. This same process was used in this research. However, a prerequisite was the need for a list of possible topics. This was obtained through a seperate survey of CON 331 students.

Survey Design. The list of possible topics for CON 331 to be used in the initial questionnaire for the panel of experts was established as described below.

A survey was given to the students of the October 1992 and February 1993 CON 331 course offerings. Recall that this course currently provides the journeyman price analyst with training to improve their technical skills and increase their technical level of competency. Also note that these classes were not completely composed of only pricing managers and executives. The topics contained in the surveys were determined by the researchers. This determination was based on personal experience and informal discussions with several

individuals in the pricing career field. In addition to the suggested topics, recommendations were solicited from the survey participants for additional topics. We surveyed these students to search for potential topics to use in the Delphi technique survey. The survey instrument and the results are contained in Appendices B and C respectively.

In order to ensure a wide variety of topics for the experts questionnaire, comments from course critiques completed by students throughout 1992, and, for comparison purposes, critiques from 1997 were reviewed, as well as literature regarding the topics of concern for cost and price analysts was explored. Based on this information and the results of the student surveys an initial questionnaire to be administered to the experts was established.

Initial Questionnaire. The questionnaire, developed as described above, was sent to the panel of experts. The experts were requested to rate the topics based on the importance of the topic as it relates to their needs. The rating is based on a scale of 1 to 5; 1 representing the lowest level of importance and 5 representing the highest level of importance. In addition, we requested recommendations from the experts relating to topics that were not specifically listed in the questionnaire. The initial questionnaire is contained in Appendix D.

Tabulation of Results and Formulation of Second Questionnaire. Once the results were received, the raw data was combined into a frequency of rating for each topic. Since the objective of this questionnaire was to determine the most important topics, we grouped the data into two categories; category A representing topics where at least 3 of the 6 experts initially weighted a topic 4 or 5 (high on the scale of importance), representing a consensus of importance, and category B representing the remainder of the topics. The remainder of the questionnaire process concerned itself with only the category A topics (as they represent the group consensus as to the important topics) and all other topics initially recommended by the experts (in order to give the entire group of experts a chance to weight these topics).

Second Questionnaire Process. The second questionnaire consisted of a listing of all of the topics that the experts determined to be important (category A topics) along with the recommendations submitted in the initial survey. In this questionnaire, the experts were requested to rank the topics in order of most important to least important. In addition, the experts were asked to provide specific areas of need (subtopics) relating to at least their five most important general topics. The second questionnaire is contained in Appendix F.

Tabulation of Results. The results of the second questionnaire were tabulated by topic. We then performed Ken-

dall's coefficient of concordance test to determine the degree of agreement among the experts for the ranking of the topics. (An explanation of how Kendall's coefficient of concordance works is contained in Appendix H.) Having established a minimum confidence level of 85% and since the test indicated agreement between the experts at a significance level of less than 15% when adjustments were made for the polarized topics, only two iterations of the questionnaire were required.

Survey Instrument Validity. The topic selection procedure described above addresses the content validity of the instrument. Concurrent and construct validity are established via two approaches. The first, which is more concerned with forecasting, compares the Delphi predictions with actual occurrences. Experimental results show that Delphi is "at least a 'good' predictor with predictions relatively close to actuality" (Tersine and Riggs, 1976:56). The second compares Delphi with other, more conventional methods and here, too, the Delphi method has been found to be a more accurate forecaster (Tersine and Riggs, 1976:56). Regarding the validity of using the Delphi technique for developing curriculum requirements, Weaver states "The results you obtain in a Delphi study represent a firm, locally valid basis on which you can build a relevant curriculum" (Weaver, 1988:20). The "local" nature of this study, relating to its

validity, rests in the very narrow topic of interest, training for pricing executives and managers.

Summary

Previously, the question hierarchy and the pertinent literature regarding the investigative questions were reviewed. This chapter thoroughly explained and justified the research design and methodology. A questionnaire methodology based on the Delphi technique was developed to establish a list of suggested course topics and subtopics to be used in the CON 331 course curriculum. The next chapter provides insight into the data description and analysis of the research.

Chapter IV

Findings and Analysis

Introduction

This chapter presents the results of our research effort as described in Chapter III. The results and data analysis for the student surveys (used to develop the experts questionnaire) and the two iterations of expert questionnaires are presented followed by the specific findings as they relate to our investigative questions.

Student Surveys

As described in Chapter III, the purpose of the student surveys was to gather input data for the formulation of the expert's questionnaire. The October 1992 CCN 331 class was surveyed to assist in determining topics for the expert questionnaire. The February 1993 CCN 331 class was also surveyed to validate the initial survey results and search for additional expert questionnaire topics. The survey given to both classes is contained in Appendix B.

The general format of the surveys is as follows. The survey begins with an introductory paragraph explaining the purpose of the survey. Next, there is a request for demographic information (i.e. current position, length in current position, grade or rank, and years experience at given lev-

els). This information was necessary in order to have a general idea of the backgrounds of the survey respondents. A listing of possible topics was provided and the respondents were asked to rate them in order of need for their current position with 1 representing a low need and 5 representing a high need. This was followed by a request for any additional topics not contained in the survey.

Demographic Data Summary. Summarized in Table 4.1 is the demographic data collected during the student surveys. The demographic data includes the total number of survey respondents, whether they hold supervisory or nonsupervisory positions, their grade or rank, and the average pricing experience of the group.

TABLE 4.1

DEMOGRAPHIC DATA OF STUDENTS SURVEYED

Total survey respondents:	27	
Supervisory/Nonsupervisory	11/16	
Grade/Rank:		
GS/GM-14: 3	GS/GM-13: 11	GS-12: 9
Lt Col: 2	Maj: 1	Capt: 1
Average Pricing Experience:	8.0 years	

Survey Results. Table 4.2 lists the results from the student surveys presented in ranked order of average weighting (The individual raw data rankings are contained in Appendix C.). The table lists each specific topic and the average rating the topic received in the student survey.

TABLE 4.2
RESULTS OF STUDENT SURVEYS

<u>Topic</u>	<u>Average Rating</u>
Estimates vs Actuals	4.2
Incentive Arrangements	4.2
Estimating	4.1
Evaluation of Bill of Material	4.1
Defective Pricing	4.1
* Analysis of Technical Input	3.9
* Analysis of DCAA Input	3.8
Claims	3.7
Overhead (Unallowables)	3.6
* Source Selection	3.6
Statistical Tools	3.6
Requests for Equitable Adjustments	3.5
* Factfinding	3.5
Cost Accounting Standards	3.5
Lease vs Buy	3.5
Disputed Claims	3.4
Uncompensated Overtime	3.4
Termination for Convenience	3.3
Ethical Negotiations	3.2
Warranties	3.2
Acquisition Professional Development Program	3.1
Termination for Default	3.1
Laws, Cases	3.1
Depreciation	3.0
Value Engineering Change Proposal	2.9
Impact/Cost of CPR, Mil Std 1567A	2.9
Management Information Systems	2.7
Alternate Disputes Resolution	2.7
Subordinate Training	2.6
Ethical Conduct	2.6
Deferred Compensation	2.6
Contract Basics	2.5
* Foreign Military Sales Pricing Support	2.4
Court Appearances	2.1
Voluntary Refunds	2.1
Defense Base Operating Fund	2.0
* Depot Competition	1.9
* Topics suggested by students	

Formulation of Expert Questionnaire. As explained in Chapter III, the purpose of the student surveys was to determine topics to include in the expert questionnaire. In order to have a wide variety of topics in the first expert questionnaire, we decided not to eliminate any possible topics. Therefore, all of the topics contained in the students survey were included in the first expert questionnaire.

First Expert Questionnaire

As previously stated in Chapter III, the purpose of the first expert questionnaire was to present a list of possible topics for the experts to rate in order of preference for use in developing the curriculum for CON 331. The experts were requested to score all of the topics on a scale of 1 to 5 with 1 representing a low need and 5 representing a high need. In addition to scoring the topics, the experts were also asked to include any topics that they considered important but were not included in the questionnaire.

Questionnaire Results. Illustrated in table 4.3 are the results of the first expert questionnaire. The topics are listed as they appeared on the questionnaire. The table lists each topic and its frequency of rating. The frequency of rating represents how the group of experts rated a particular topic. For instance, ethical negotiations received 1 rating of 3, 1 rating of 4, and 4 ratings of 5. The raw data scores from this questionnaire are contained in Appendix E.

TABLE 4.3
FREQUENCY OF SCORES OF TOPICS RESULTING FROM
FIRST EXPERT RESPONSE

Topics	Frequency				
	1	2	3	4	5
Ethical Negotiations	0	0	1	1	4
Laws, Cases	0	0	1	2	3
Ethical Conduct	0	0	1	2	3
Overhead (Unallowable)	1	0	1	2	2
Estimating	1	1	0	2	2
Depot Competition	2	0	0	2	2
Contract Basics	0	1	1	2	2
Incentive Arrangements	0	0	0	5	1
Cost Performance Reports, Work Measurement, etc.	0	1	1	3	1
Subordinate Training	0	0	0	6	0
Factfinding	1	1	1	0	3
Cost Accounting Standards	1	1	1	2	1
Estimates vs Actuals	1	0	2	2	1
Request for Equitable Adjustment	1	1	1	2	1
Source Selection	0	0	3	3	0
Claims	1	1	1	3	0
Alternate Disputes Resolution	1	1	3	0	1
Defective Pricing	1	0	3	1	1
Foreign Military Sales Pricing Support	1	0	3	1	1
Evaluation of Bill of Materials	1	1	4	0	0
Statistical Tools	0	2	2	2	0
Court Appearances	2	1	1	2	0
Depreciation	1	1	3	1	0
Warranties	2	0	4	0	0
Disputed Claims	1	2	2	1	0
Management Information Systems	0	1	4	1	0
Deferred Compensation	2	1	1	2	0
Uncompensated Overtime	3	1	0	1	1
Termination for Default	2	2	2	0	0
Voluntary Refunds	2	2	0	2	0
Defense Base Operating Fund	3	1	1	1	0
Value Engineering Change Proposal	2	2	2	0	0
Termination for Convenience	2	2	2	0	0
Lease vs Buy Decisions	1	3	1	1	0

Analysis Performed. As explained in Chapter III, the topics were divided into two groups, Group A and Group B. Group A represented the topics in which at least 3 of the 6 experts scored a given topic as a 4 or 5. This represented a consensus as to an important topic. The remainder of the topics were placed in Group B. The Group B topics were excluded from the remainder of the research as they represent topics in which expert interest as a group was not high. Shown in Tables 4.4 and 4.5 are the group A and B topics resulting from this analysis. Table 4.4 represents the topics which were included in the second experts questionnaire. Table 4.5 reflects those topics which the experts did not reach a consensus as to being important topics for consideration. Both lists of topics are listed in order of their mean average score, from highest to lowest.

The topics shown in Table 4.6 were suggested by the experts for inclusion as additional topics in the next questionnaire. This list represents recommendations from the experts as to topics they individually believe to be of importance to pricing executives and managers.

Formulation of Second Expert Questionnaire. The second expert questionnaire consisted of the group A topics from the first questionnaire that the experts agreed were important (shown in Table 4.4) and any topic that was recommended by an individual expert (shown in Table 4.6). This was necessary

TABLE 4.4

TOPICS TO BE INCLUDED IN THE SECOND QUESTIONNAIRE (GROUP A)

Ethical Negotiations
Laws, Cases
Ethical Conduct
Overhead (Unallowable)
Estimating
Depot Competition
Contract Basics
Incentive Arrangements
Cost Performance Reports, Work Measurement
Subordinate Training
Factfinding
Cost Accounting Standards
Estimates vs Actuals
Request for Equitable Adjustment
Source Selection
Claims

TABLE 4.5

TOPICS TO BE EXCLUDED FROM SECOND QUESTIONNAIRE (GROUP B)

Alternate Disputes Resolution
Defective Pricing
Foreign Military Sales Pricing Support
Evaluation of Bill of Materials
Statistical Tools
Court Appearances
Depreciation
Warranties
Disputed Claims
Management Information Systems
Deferred Compensation
Uncompensated Overtime
Termination for Default
Voluntary Refunds
Defense Base Operating Fund
Value Engineering Change Proposal
Termination for Convenience
Lease vs Buy

TABLE 4.6

ADDITIONAL TOPICS SUGGESTED BY EXPERT PANEL

Adequate Price Competition for Other than Firm-Fixed-Price
Pricing Arrangements
Contractor Financing
Cost Monitoring Reviews
DoD Profit Policy
Eichleay Formula for Unabsorbed Overhead
Pricing of Commercial Items
Program Management/Pricing Conflict Resolution
Roles/Responsibilities of a Price Analyst in Negotiations
Specialized Cost Reviews ie. Should Cost

in order to allow the entire panel of experts to rank the
individually suggested topics.

Second Expert Questionnaire

The second expert questionnaire requested the experts to
rank all of the topics in order of importance from 1 to 25 (1
representing the most important topic and 25 representing the
least important). In addition, each expert was requested to
provide comments relating to at least their top 5 topics.
The purpose of the comments was to receive suggested areas of
discussion relating to individual topics. The goal of this
questionnaire was to establish a prioritized list of suggest-
ed topics and comments for at least the top 10 topics.

Questionnaire Results. Shown in Table 4.7 is the list
of topics and the rankings that each individual expert as-
signed each topic. The table lists each topic and indicates

the ranking that each expert gave the topic. The topics are listed in the order that they were presented in the questionnaire.

TABLE 4.7
RANKINGS OF INDIVIDUAL TOPICS BY EXPERT

Topic	Expert					
	1	2	3	4	5	6
Ethical Negotiations	18	3	24	16	1	9
Current Laws and Cases	9	2	20	13	2	4
Ethical Conduct	19	4	23	6	3	8
Incentive Arrangements	7	10	9	1	4	9
Establishing A Training Program for Subordinates	13	5	10	15	5	14
Fundamentals of Contract Theory	8	24	15	5	6	24
Overhead (Unallowables)	14	13	5	21	7	13
Impact/Cost of CPR, Mil Std 1567A, etc	21	13	18	14	20	21
Source Selection	2	15	7	4	17	15
Estimating	11	19	1	12	10	21
Factfinding	12	20	2	2	11	20
Estimates vs Actuals	10	21	4	22	15	22
Depot Competition	1	14	14	7	23	11
Cost Accounting Standards	15	23	6	11	16	12
Requests for Equitable Adjustment	4	22	16	3	22	1
Claims	6	17	17	8	21	7
Adequate Price Competition for Other than FFP	3	11	8	17	19	10
Contractor Financing	25	12	25	20	12	3
Cost Monitoring Reviews	24	25	13	13	13	23
DoD Profit Policy	20	8	22	19	14	16
Eichleay Formula for Unabsorbed Overhead	5	16	21	23	24	17
Pricing of Commercial and Non- developmental Items	16	6	11	9	23	19
Program Management/Pricing Conflict Resolution	22	1	19	24	18	1
Roles/Responsibilities of the Price Analyst in Negotiations	17	7	3	25	9	2
Specialized Cost Reviews	23	9	12	10	8	18

Table 4.8 lists all of the comments provided by the experts for their five highest individually ranked topics. The table lists the comments from the experts relating to specific recommendations on areas to be discussed under individual topics. The comments are listed in the order received.

TABLE 4.8
COMMENTS ON SPECIFIC TOPICS

Comments:

Program Management/Pricing Conflict Resolution

- Program management's mission
- Pricing's mission
- Resolution of the conflict

Roles/Responsibilities of the Analyst in Negotiations

- Role of Contracting Officer
- Role of the Price Analyst
- Role of the field agencies
- Role of other technical support

Ethical Settlements in Negotiations

- What is a settlement?
- What ethics are involved in negotiations?
- Do laws protect the Government from poor ethics on the contractor's part?
- Equity for both Government and contractor

Current Laws, Court Cases, Regulations

- FAR, DFARS
- ASBCA cases

Ethical Conduct

- Combine with "Ethical Negotiations"
- Truth in Negotiations Act
- Disclosure of unallowable costs

Incentive Arrangements

- Types of contracts
- Performance incentives
- Tradeoffs

TABLE 4.8 (CONTINUED)

COMMENTS ON SPECIFIC TOPICS

Establishing a Training Program for Subordinates

- Need for technical training in such areas as price/cost analysis, cost estimating, contract administration, cost accounting standards, overhead analysis, etc.

Factfinding

- What to look for
- How to conduct meetings

Requests for Equitable Adjustments

- Rules for establishing price
- Contract terms, e.g. Not-To-Exceed, Changes Clause
- Differences between equitable adjustment and repricing
- How to achieve "leave them as you found them" while complying with TINA
- Form in which proposal should be submitted

Source Selection

- Methods of evaluation
- Rules
- How to perform cost realism assessment with limited, uncertified cost/price data
- Define realistic, complete, and reasonable
- How to handle uncorrected CR's

Fundamentals of Contract Theory

- Contract provisions vs price
- Laws
- Contract types

Depot Competition

- Relationship between Cost Comparability Handbook and Cost Accounting Standards
- How to perform meaningful comparisons of public and private proposals
- Overview of differences in costing practices among the services

Adequate Price Competition for Other than FFP

- How to structure evaluation criteria to obtain apples to apples comparison
- Examples of contract arrangements

TABLE 4.8 (CONTINUED)

COMMENTS ON SPECIFIC TOPICS

Eichleay Formula for Unabsorbed Overhead

- Case law history
 - Premise upon which entitlement is established
 - Formula for calculation
 - Burden of proof
 - Allowability/unallowability of variable and semi-variable costs in overhead pool
-

Analysis Performed. A composite ranking of the experts' individual rankings was developed by summing the rank assigned by each of the experts to each topic. The composite ranking was then prioritized from most preferred to least preferred. A calculated Kendall's coefficient of concordance (W) of .183, with the associated Chi-squared value of 26.4 and p-value of .334, indicates the degree of consensus is not very high (Kendall: Chapter 3). (Reference Appendix H for a more detailed discussion of Kendall's coefficient of concordance (W), related statistical measures, and specific formulae.) The resulting prioritized composite ranking is shown in Table 4.9, as is the analysis of the data.

A "polarized" topic is defined to exist whenever at least two respondents ranked the topic in the first quartile and at least two ranked it in the last quartile. This polarization of opinions on some issues is expected and reflects valid observations or needs based upon the respondents locations and/or experiences.

TABLE 4.9

ANALYSIS OF RESPONSES TO SECOND QUESTIONNAIRE

ITEM	EXPERT #:	1	2	3	4	5	6	SUM	(SUM-MS) ²
Incentive Arrangements		7	10	9	1	4	9	40	1444
Current Laws and Cases		9	2	20	13	2	4	50	784
Ethical Conduct		19	4	23	6	3	5	60	324
Source Selection		2	15	7	4	17	15	60	324
Establishing a Training Program for Subordinates		13	5	10	15	5	14	62	256
Roles/Responsibilities of the Price Analyst in Negotiations		17	7	3	25	9	2	63	225
Ethical Negotiations		18	3	24	16	1	3	65	169
Factfinding		12	20	2	2	11	20	67	121
Adequate Price Competition for Other than Firm Fixed Price		3	11	8	17	19	10	68	100
Depot Competition		1	14	14	7	25	11	72	36
Requests for Equitable Adjustments		4	22	16	3	22	6	73	25
Estimating		11	19	1	12	10	21	74	16
Claims		6	17	17	8	21	7	76	4
Overhead (Unallowables)		14	18	5	21	7	13	78	0
Specialized Cost Reviews		23	9	12	10	8	18	80	4
Fundamentals of Contract Theory		8	24	15	5	6	24	82	16
Cost Accounting Standards		15	23	6	11	16	12	83	25
Pricing of Commercial and Nondevelopmental Items		16	6	11	9	23	19	84	36
Program Management/Pricing Conflict Resolution		22	1	19	24	18	1	85	49
Estimates		10	21	4	22	15	22	94	256
DoD Profit Policy		20	8	22	19	14	16	99	441
Contractor Financing		25	12	25	20	12	8	102	576
Eichleay Formula for Unabsorbed Overhead		5	16	21	23	24	17	106	784
Impact/Cost of CPR, Mil Std 1576A, etc		21	13	18	14	20	23	109	961
Cost Monitoring Reviews		24	25	13	18	13	25	118	1600
<hr/>									
Total sum of ranks		1950							
Mean of sum of ranks (MS)		78							
Sum of squares of deviation from mean (S)		8576							
Coefficient of concordance (W)		0.183							
Chi-squared (X ₂)		26.39							
Degrees of freedom (v)		24							
p-value		0.334							

When adjustments are made for the four "polarized" topics, the resultant coefficient of concordance is .230, the associated Chi-squared value is 27.5, and the p-value is .121, meeting our established significance level for determining whether a consensus exists.

This polarization does not affect the overall ranking of the topics, but does affect the apparent strength of the agreement or degree of consensus. Without adjusting for the polarized topics, the data reflects a 67% level of confidence that the ranking reflects a consensus. After adjusting for four polarized issues, the level of confidence rises to 88%, which is considered appropriate for decisions regarding issues as general as education. Table 4.10 presents the analysis of the data with the adjustments for the polarized topics. The polarized topics are indicated with an asterisk.

Findings

Investigative Question 1. Investigative question 1, Who is presently required to take the course?, was answered in Chapter 2, Literature Review. We found that any individual in the contracting career field (GS-1102 and comparable military) who has the grade of GS/GM-13 or above the or rank of 0-4 or above and holds a job that is "primarily cost and price analysis oriented" is required to have completed CON 331 -- "Executive Cost and Price Analysis" (DOD 1991: B.1-5).

TABLE 4.10

ADJUSTED ANALYSIS OF RESPONSES TO SECOND QUESTIONNAIRE

ITEM	EXPERT #:	1	2	3	4	5	6	SUM	(SUM-MS) ²
Incentive Arrangements		6	9	8	1	4	7	35	961
Current Laws and Cases		7	1	16	10	2	3	39	729
Ethical Conduct		16	3	19	3	3	4	48	324
Source Selection		2	14	6	2	15	13	52	196
Establishing a Training Program for Subordinates		10	4	9	12	5	12	52	196
Roles/Responsibilities of the Price Analyst in Negotiations		14	6	2	21	8	1	52	196
Ethical Negotiations		15	2	20	13	1	2	53	169
Factfinding *									
Adequate Price Competition for Other than Firm Fixed Price		3	10	7	14	16	8	58	64
Depot Competition		1	13	13	4	21	9	61	25
Requests for Equitable Adjustments *									
Estimating		9	18	1	9	9	18	64	4
Claims		5	16	14	5	18	5	63	9
Overhead (Unallowables)		11	17	4	18	6	11	67	1
Specialized Cost Reviews		19	8	11	7	7	16	68	4
Fundamentals of Contract Theory *									
Cost Accounting Standards		12	20	5	8	14	10	69	9
Pricing of Commercial and Nondevelopmental Items		13	5	10	6	19	17	70	16
Program Management/Pricing Conflict Resolution *									
Estimates		8	19	3	19	13	19	81	225
DoD Profit Policy		17	7	18	16	12	14	84	324
Contractor Financing		21	11	21	17	10	6	86	400
Eichleay Formula for Unabsorbed Overhead		4	15	17	20	20	15	91	625
Impact/Cost of CPR, Mil Std 1567A, etc		18	12	15	11	17	20	93	729
Cost Monitoring Reviews		20	21	12	15	11	21	100	1156
Total sum of ranks		1386							
Mean of sum of ranks (MS)		66							
Sum of squares of deviation from mean (S)		6362							
Coefficient of concordance (W)		0.230							
Chi-squared (X ₂)		27.54							
Degrees of freedom (v)		20							
p-value		0.121							

Investigative Question 2. Investigative question 2, What are the current course objectives and content?, was answered in Chapter 2, Literature Review. We found the current course objective was to address specific problems being experienced in the pricing career field by journeyman working analysts (Daneman, 1993). The current course description states that the course "Provides experienced procurement analysts with statistic and accounting tools necessary to analyze costs, establish cost estimating relationships, and develop reasonable cost estimates in large system procurements" (AFIT 1989: 201-202). Topics in the current course include the impact of unallowable pool and base costs on overhead allocation, probability and decision analysis, tracking actual costs to estimated costs to ascertain bias, and risk analysis and production quantity.

Investigative Question 3. Investigative question 3, What specific topics represent the needs of the people who are required to take the course?, was answered in this chapter. By questioning a panel of six experts using a Delphi technique as explained in Chapter 3, Methodology, a consensus was reached on a prioritized list of topics. In addition to the list of topics, comments relating to specific recommendations for areas of study for an individual topic were received for fourteen of the topics. Illustrated in Table 4.11 is the prioritized list of recommended topics for CON 331 --

Executive Cost and Price Analysis. The comments relating to the specific topics are located in Table 4.3.

TABLE 4.11

PRIORITIZED LIST OF RECOMMENDED TOPICS

1. Incentive Arrangements
 2. Current and Pending Laws, Court Cases, Regulations
 3. Ethical Conduct
 4. Source Selection Pricing Support
 5. Establishing a Training Program for Subordinates
 6. Roles and Responsibilities of Pricers in Negotiations
 7. Ethical Settlements in Negotiations
 8. Factfinding
 9. Adequate Price Competition for Other than FFP Contracts
 10. Depot Competition
 11. Requests for Equitable Adjustments
 12. Estimating
 13. Claims
 14. Overhead (Unallowables)
 15. Specialized Reviews, e.g., Should Cost
 16. Fundamentals of Contract Theory
 17. Cost Accounting Standards
 18. Pricing of Commercial, Nondevelopmental Items
 19. Program Management/Pricing Conflict Resolution
 20. Estimates vs Actuals
 21. Department of Defense Profit Policy
 22. Contractor Financing
 23. Eichleay Formula for Unabsorbed Overhead
 24. Impact and Cost of C/SCSC, CPR, C/SSR, etc.
 25. Cost Monitoring Reviews
-

The following is a summary of the comments provided by the panel of experts for the top ten topics.

Topic 1. The points of emphasis or subtopics recommended for the discussion of incentive arrangements included reviews of cost and fixed price incentive contracts,

performance incentives, working with multiple incentives, and possible trade-offs.

Topic 2. A review of current and pending laws, regulations, and board or court cases, including changes in the Federal Acquisition Regulations and Department of Defense Federal Acquisition Regulation Supplement, should emphasize new trends and developments as opposed to administrative changes.

Topic 3 (also #7). The comments regarding ethical conduct were very closely related to comments relating to ethical settlements in negotiations. Accordingly, the subtopics and points of emphasis will be listed together. No comments referenced Air Force Regulation 30-30 or similar ethics regulations or credos. The subtopics include concepts such as fair and reasonable settlements and open communications. Specifically, the listed subtopics were equity for both government and contractor, what constitutes a settlement, what ethics are involved in negotiations, how to elicit compliance with the Truth in Negotiations Act and the disclosure of unallowable costs, and "does 'law' protect the government from poor ethics on contractor's part?".

Topic 4. The topic of pricing support for source selection should include the following subtopics: methods of evaluation; defining realistic, complete, and reasonable; how to perform cost realism assessments with limited, uncertified

cost and pricing data; how to handle uncorrected Deficiency Reports; and the rules of source selection.

Topic 5. To establishing a training program for subordinates, technical training in such areas as price/cost analysis, cost estimating, contract administration, cost accounting standards, overhead analysis, and so forth must be addressed.

Topics 6 (also #19). The topic of roles and responsibilities of pricers in negotiations is closely related to the topic which ranked nineteenth overall, program management/pricing conflict resolution, and which is polarized. What is being sought is a clearer definition of the mission and role of the pricer, the contracting officer, the auditor, other technical support personnel, and of the program manager. Those roles are defined by each particular office's organizational structure and cultural norms. For example, one purchasing center reportedly exhibits conflict between the program managers and the pricers, whereas such conflicts seldom if ever occur at other purchasing centers. The norms of the latter offices have more clearly defined roles for each function. In addition to clearer definitions, techniques are needed to resolve conflicts whenever they occur.

Topic 7. Refer to topic #3.

Topic 8. There were polarized views regarding whether the topic of factfinding should be considered for an

executive pricing course. On the "no" side are those who feel that either the pricer is just one of a factfinding team (not the leader) or that factfinding is a basic task already mastered by all who are required to take the course. On the "yes" side are those who feel that the pricer is the key player in factfinding and that inadequate attention has been given to ensuring that all elements of the statement of work are addressed and appropriately priced in the contractor's proposals. Accordingly, the recommended subtopics are what to look for and how to conduct the meetings.

Topic 9. Obtaining adequate price competition for other than firm fixed price contracts requires structuring the evaluation criteria to obtain an "apples-to-apples" comparison. Requested are examples for fixed price incentive firm, cost plus incentive fee, cost plus fixed fee, and time and material contract types.

Topic 10. Some pricing offices have become involved in the evaluation of competitive proposals submitted by various depots and, sometimes, private entities. To evaluate the proposals, a better understanding of the relationship between the Cost Comparability Handbook and the Cost Accounting Standards, instruction on how to perform meaningful comparisons of public and private proposals, and an overview of differences in costing practices among the services are needed.

Summary

Presented in this chapter were the quantitative results of the student surveys and quantitative and qualitative results of the expert questionnaires. A detailed analysis of each set of data was also presented. The result of this analysis is a prioritized list of recommended topics to be taught in CON 331 -- "Executive Cost and Price Analysis," reflecting a consensus by the panel of experts, as well as specific comments on the top ten recommended topics.

Chapter V

Conclusions and Recommendations

Overview

This final chapter summarizes Chapters I through III and the findings set forth in Chapter IV. The practical implications of the research are discussed. Recommendations for studies which replicate or follow-up this effort are made.

Summary of Preceding Chapters

General Issue. In order to address the education related findings of the President's Blue Ribbon Commission on Defense Management (Packard Commission), the Department of Defense established a three tiered certification process for acquisition personnel. Each certification level contains minimum requirements for education, training, and experience. Several Air Force Institute of Technology Professional Continuing Education departments are conducting studies to determine how best to fulfill the various training requirements for the different certification levels.

Specific Problem. Air Force Institute of Technology Professional Continuing Education course CON 331 -- "Executive Cost and Price Analysis" is now required for Level III certification, for pricing managers and executives. What changes in the existing course curriculum need to be made to meet the needs of the current students?

Investigative Questions. In order to resolve the specific problem, the following investigative questions have been answered through literature reviews and use of the Delphi technique with a carefully chosen panel of experts representing the population required to take the course.

1. Who is presently required to take the course? Any individual in the contracting career field (GS-1102 and comparable military) who has the grade of GS/GM-13 or above or the rank of O-4 or above and holds a job that is primarily cost and price analysis oriented is required to have completed CON 331 -- "Executive Cost and Price Analysis" (DOD 1991: 3.1-5).

2. What are the current course objectives and content? The current course description states that it "Provides experienced procurement analysts with statistics and accounting tools necessary to analyze costs, establish cost estimating relationships, and develop reasonable cost estimates in large system procurements" (AFIT 1989: 201-202). Topics in the current course include the impact of unallowable pool and base costs on overhead allocation, probability and decision analysis, tracking actual costs to estimated costs to ascertain bias, and risk analysis and production quantity.

3. What specific topics represent the needs of the people who are required to take the course? In rank order, from most desirable to least desirable, the recommended topics for the Executive Pricing Course are listed in Table 5.1.

TABLE 5.1

RECOMMENDED TOPICS

1. Incentive Arrangements
 2. Current and Pending Laws, Court Cases, Regulations
 3. Ethical Conduct
 4. Source Selection Pricing Support
 5. Establishing a Training Program for Subordinates
 6. Roles and Responsibilities of Pricers in Negotiations
 7. Ethical Settlements in Negotiations
 8. Factfinding
 9. Adequate Price Competition for Other than FFP Contracts
 10. Depot Competition
 11. Requests for Equitable Adjustments
 12. Estimating
 13. Claims
 14. Overhead (Unallowables)
 15. Specialized Reviews, e.g., Should Cost
 16. Fundamentals of Contract Theory
 17. Cost Accounting Standards
 18. Pricing of Commercial, Nondevelopmental Items
 19. Program Management/Pricing Conflict Resolution
 20. Estimates vs Actuals
 21. Department of Defense Profit Policy
 22. Contractor Financing
 23. Eichleay Formula for Unabsorbed Overhead
 24. Impact and Cost of C/SCSC, CPR, C/SSR, etc.
 25. Cost Monitoring Reviews
-

Conclusions

The change in clientele for the "Executive Cost and Pricing Course" has resulted in a need to change the topics addressed in the course. While those journeymen analyst who occasionally take the course express appreciation for and satisfaction with the current topic selection, the pricing managers and executives who complete the current course generally express dissatisfaction with the content. The panel of experts recommended the topics listed in Table 5.1 be considered for the course. In considering their recommendations, the course instructor may choose to group the topics in a manner that facilitates their presentation.

Recommendations

Comments on the methodology. Use of the Delphi technique with Kendall's Coefficient of Concordance has been quite effective and practical. Several changes, though, are recommended to enhance its usefulness. In the first round the experts should 1) rank the topics, 2) define the most preferred five and explain why each is important, and 3) list and define any additional topics and explain why each is important, but do not rank the additional topics.

Before the second round, any topic listed by all experts as being in the bottom 50% could be dropped. This would make successive rounds less cumbersome and would not affect the topics selected for the course since the available time

typically limits the number of topics to be covered to a maximum of about two to four per week.

In the second round the experts should again rank all the topics, including the topics added by the experts in the first round. The definitions and explanations, as well as the composite ranking of the first round, should be provided as information in the second round.

Suggestions for Follow-On Studies. The Air Force Deputy Undersecretary for Acquisition has expressed an interest in studies which address the extent to which required Professional Continuing Education courses meet the Acquisition Professional Development Program educational goals. Accordingly, similar studies for all required Professional Continuing Education courses are warranted. With a methodology already established, future research could address groups of courses rather than one course at a time. After a revised CON 331 "Executive Cost and Price Analysis" has been offered to several classes, a follow-up study on CON 331 should be conducted to ascertain whether the recommended topics adequately address the training needs of pricing managers and executives.

Summary

The Department of Defense established CON 331 -- Executive Cost and Price Analysis as a prerequisite for Level III certification and Level III certification is required of

all pricing managers and executives. The current course content was designed to meet the needs of pricing journeymen or "master" pricers, covering advanced techniques of cost analysis and risk assessment. Therefore, the current course content does not adequately address the needs of the new clientele. The result of this study has been a recommended selection of topics for the Professional Continuing Education course CON 331 -- Executive Cost and Price Analysis.

The Department of Defense is interested in determining the extent to which the Professional Continuing Education courses address the training needs of acquisition personnel. To that end additional studies are recommended which examine the effectiveness of various Professional Continuing Education courses in meeting the education goals of the Acquisition Professional Development Program.

Appendix A
The Delphi Method

When to Use

The Delphi technique is a decisionmaking aid that elicits a consensus judgement or opinion from a panel of experts through an iterative questionnaire and feedback process. The method is most useful whenever insufficient or no applicable data exists, the required data is too expensive to obtain and analyze, or the significant problem variables and their interaction are not clearly known (Zaloom 1974: 32).

The Process

The Delphi process involves sending a questionnaire to a panel of experts who remain anonymous during the survey process. The results of the questionnaire are tabulated and resubmitted to the panel for reconsideration. Experts are asked to explain their opinions so that the entire panel can use all available information and judgements during reconsideration. The revised submissions are tabulated and submitted again to the experts. This process of submission, tabulation, explanation, and resubmission is repeated until a consensus is reached or until divergent views are clarified and well understood by the panel members, the researchers, and the decisionmakers.

Uses of Delphi and Current Application

The primary use of the Delphi method has been in forecasting, e.g., market prospects or technology development. More recently the technique has been used in policy formulation in areas of education, transportation, health care (Rohrbaugh 1979: 76), urban planning (Morgan, Pelissero, and England 1979: 380), and productivity assessments (Scott and Simmons 1974: 71), and in predicting the impact of socioeconomic programs, of changes in department stores, of land use policy, and of various information systems (Tersine and Riggs 1976: 52). Miles Weaver (1988: 18), Martin (1993: 267), and Dorothy Olshfski and Alma Joseph (1991: 297) advocate the use of the Delphi technique in training need assessment and curriculum design. Usually, a consensus is reached in four or fewer rounds (Zaloom 1974: 33). However, the education literature has documented consensus in three rounds (Weaver 1988:18).

Advantages

Delphi is recognized to have several advantages over other group decisionmaking techniques or other more conventional means of gathering opinions on topics not subject to precise quantification. Since the experts are anonymous, one may change his mind without ego involvement; each participant is less subject to being unduly influenced by the status or power of another expert participant; there is reduced pressure

to experts to be influenced by the bandwagon effect (Tersine and Riggs 1976: 51-52). There is no chance that a participant with strong oratory skills can sway the panel and the panelists more readily abandon popular opinions that are not well founded (Zaloom 1974: 32). Other advantages include low cost, unnecessary to arrange common meeting times and places, no restrictions on the number of participants, it encourages participant consideration of alternative opinions (Tersine and Riggs 1976: 52), and, as with other group techniques, the panelists have a sense of ownership toward the final product, which is important in educational uses (Weaver 1988: 18). The survey is also easily and accurately interpreted by the experts. With a relatively small number of experts comprising the panel, it is relatively convenient to execute and is, hence, easily replicated.

Disadvantages

The Delphi technique is not without some limitations. The panel selection is a critical step; poor panel selection can make the whole process worthless; the number of calendar days required to complete each iteration of questionnaire can be three or four weeks, especially if the experts are pressed for time by other commitments and must "work in" the questionnaire responses; and expert motivation can wane (Tersine and Riggs 1976: 55). Sackman, cited by Morgan and others, reviewed 150 Delphi studies and found, among other things,

that it does not attain "professional standards for questionnaire design and validation," inhibits individuality and adversarial processes, misleads the uninformed regarding its precision, and fosters a form of elitism in solving social problems (Morgan, Pelissero, and England 1979: 381).

Some of Sackman's concerns beg the question of the Delphi technique; if more rigorous research techniques wherein statistical tests and other professional standards could be employed were possible, then the Delphi technique would be set aside in favor of the more rigorous methods. Further, most of Sackman's concerns were directed toward forecasts in technology, not the area of curriculum development. As stated, Delphi has been identified as a preferred method for the use employed in this research.

Requirements of Experts and Panel Size

The size and composition of the panel of experts varies among areas of use. Panels have ranged in size from four (Baylock and Rees 1984: 78) to 421 (Tersine and Riggs 1976: 54). With more homogeneous groups, smaller panels are needed (Tersine and Riggs 1976: 54). The experts must have knowledge of the problem area, have a good performance record in their areas of expertise, have a high degree of objectivity and rationality, be available and commit the time required for the study (Tersine and Riggs 1976: 53-54). For education needs assessment, the experts should also be broadly represen-

tative of the population that is being assessed (Olshfski and Joseph 1991: 298). Olshfski and Joseph further distinguish using Delphi for educational needs assessment versus forecasting in the operational definition of expert. They note that in forecasting the expert is defined in terms of credentials and experience. For the educational needs assessment Delphi, they use "Mary Parker Follett's (1924) definition of expert: the individual who has experience in the organization and who therefore knows more about life inside the organization than anyone on the outside" (Olshfski and Joseph 1991: 298).

Appendix B
CON 331 -- Survey

CON 331 (WQMT 540) -- QUESTIONNAIRE

Advanced Contract Pricing, WQMT 540, is an executive level pricing course required for APDP level 3 certification. WQMT 540 was originally designed to provide "journeyman" and "master" price analysts quantitative techniques necessary for working the more complex cases encountered. As such the current course content does not address areas that may be of more value to the pricing manager or executive. Accordingly, this questionnaire seeks to ascertain those topics you consider more helpful to the pricing manager or executive.

Please provide the information requested below. Mail to:

DEPARTMENT OF THE AIR FORCE
AIR FORCE INSTITUTE OF TECHNOLOGY/LSQ
Attn: JEFF DANEMAN
2950 P STREET
WRIGHT-PATTERSON AFB OH 45433-7765

Thank you for your time and assistance.

Background information:

- 1.1 Current position: _____
- 1.2 Months in current position: _____
- 1.3 Grade or Rank: _____
- 1.4 Years of experience at indicated supervisory/executive level:

Not a supervisor: _____

First level: _____ years

Second level: _____ years

Third level: _____ years

Staff: _____ years Where: _____

Listed on the following pages are several topics. For each please indicate the need for that topic to be covered, from a low of 1 to a high of 5. With any topic your comments are solicited.

TOPIC	NEED				
	Low				High
2.1 Deferred Compensation	1	2	3	4	5
2.2 Uncompensated Overtime	1	2	3	4	5
2.3 Estimates vs Actuals	1	2	3	4	5
2.4 Incentive Arrangements	1	2	3	4	5
2.5 Depreciation	1	2	3	4	5
2.6 Evaluation of Bill of Materials	1	2	3	4	5
2.7 Lease vs Buy Decisions	1	2	3	4	5
2.8 Overhead (Unallowables)	1	2	3	4	5
2.9 Estimating	1	2	3	4	5
2.10 Warranties	1	2	3	4	5
2.11 Cost Accounting Standards	1	2	3	4	5
2.12 Ethical Settlements in Negotiations	1	2	3	4	5
2.13 Current and Pending Laws, Court Cases, and Regulations	1	2	3	4	5
2.14 Ethical Conduct	1	2	3	4	5
2.15 Defective Pricing	1	2	3	4	5
2.16 Defense Base Operating Fund	1	2	3	4	5
2.17 Statistical Tools for Pricing	1	2	3	4	5
2.18 Acquisition Professional Development Program	1	2	3	4	5
2.19 Fundamentals of Contract Theory (for those with little buying experience)	1	2	3	4	5
2.20 Impact and Cost of C/SCSC (CPR), C/SSR, Mil Std 1567A, etc.	1	2	3	4	5
2.21 Establishing a Training Program for Subordinates	1	2	3	4	5
2.22 Available Management Information Systems	1	2	3	4	5
2.23 Requests for Equitable Adjustment	1	2	3	4	5
2.24 Claims	1	2	3	4	5

TOPIC	NEED				
	Low				High
2.25 Disputed Claims	1	2	3	4	5
2.26 Alternative Disputes Resolution	1	2	3	4	5
2.27 Court Appearances	1	2	3	4	5
2.28 Value Engineering Change Proposals	1	2	3	4	5
2.29 Voluntary Refunds	1	2	3	4	5
2.30 Termination for Convenience	1	2	3	4	5
2.31 Termination for Default	1	2	3	4	5
2.32 Depot Competition	1	2	3	4	5
2.33 Factfinding	1	2	3	4	5
2.34 Analysis of Technical Reports/Input	1	2	3	4	5
2.35 Analysis of Audit Reports/Input	1	2	3	4	5
2.36 Source Selection Pricing Support	1	2	3	4	5
2.37 Foreign Military Sales Pricing Support	1	2	3	4	5

IN THE FOLLOWING SPACES, LIST ANY ADDITIONAL TOPICS YOU BELIEVE SHOULD BE CONSIDERED. FOR EACH, PLEASE INDICATE THE LEVEL OF NEED.

3.1	1	2	3	4	5
3.2	1	2	3	4	5
3.3	1	2	3	4	5
3.4	1	2	3	4	5
3.5	1	2	3	4	5
3.6	1	2	3	4	5

Appendix C

CON 331 Survey Results

Raw Data Scores

Topics	October 1992 Survey Results															February 1993 Survey Results															Ave.		
2.1	Deferred Comp	3	3	1	1	5	4	5	4	4	5	3	3	1	2	1	1	3	4	2	1	2	1	1	2	3	2	2				2.6	
2.2	Uncomp O/T	3	3	1	2	5	4	5	3	4	5	3	3	4	5	4	1	5	5	2	1	4	5	1	2	3	3	5				3.4	
2.3	Est vs Act	3	3	5	4	5	4	5	5	5	5	4	3	3	4	4	5	4	5	3	4	4	4	5	4	3	5	5				4.2	
2.4	Incentive Arrang	5	5	5	5	3	3	5	-	4	5	4	4	4	4	1	5	4	5	4	4	5	3	5	3	4	4	5				4.2	
2.5	Depreciation	4	3	1	4	3	3	5	4	3	5	3	3	4	4	1	2	3	3	2	3	3	4	1	2	3	2	2				3.0	
2.6	Eval of BOM	3	3	5	4	3	4	5	5	5	5	5	3	3	5	4	5	3	5	5	3	4	2	5	3	4	5	5				4.1	
2.7	Lease vs Buy	4	4	3	3	5	4	5	5	3	5	3	3	4	5	1	2	2	5	5	2	2	4	4	2	4	3	2				3.5	
2.8	O/H (Unallow)	4	3	1	5	3	4	5	5	5	5	4	4	3	5	1	3	3	4	5	3	4	5	1	3	3	5	4				3.6	
2.9	Estimating	3	3	5	5	3	5	5	5	4	5	4	4	3	5	4	5	4	4	5	5	4	5	5	3	3	5	1				4.1	
2.10	Warranties	4	4	5	4	3	3	5	4	4	3	2	3	3	4	1	3	1	3	4	5	3	3	3	2	4	3	1				3.2	
2.11	CAS	4	3	1	5	5	4	4	5	5	5	3	4	2	3	3	5	2	4	3	5	3	5	1	3	3	3	1				3.5	
2.12	Ethical Negot	4	3	5	2	3	4	5	5	2	3	2	4	3	4	4	3	1	5	2	5	2	2	3	2	4	4	1				3.2	
2.13	Laws, Cases	5	5	1	5	3	4	3	3	2	2	2	3	4	3	4	3	1	3	5	5	1	3	1	3	3	5	1				3.1	
2.14	Ethical Conduct	3	3	1	1	3	3	4	3	2	5	2	3	3	3	4	5	1	3	3	3	1	1	1	2	3	2	3				2.6	
2.15	Defective Price	5	4	5	5	4	4	5	5	5	5	4	4	4	4	4	3	2	5	3	3	5	4	3	3	4	3	5				4.1	
2.16	OBOP	2	4	1	1	4	3	2	3	1	3	3	2	1	1	1	1	1	2	4	5	1	1	1	2	2	1	1				2.0	
2.17	Stat Tools	1	3	3	4	4	4	3	4	4	5	3	4	2	4	4	5	4	5	4	4	5	4	3	3	3	3	1				3.6	
2.18	APDP	5	3	5	4	3	4	4	5	1	5	5	4	1	1	4	3	1	2	5	3	2	4	1	2	4	3	1				3.1	
2.19	Contract Basics	3	3	1	1	3	-	1	4	1	5	3	2	1	5	2	1	1	3	4	2	4	1	1	2	3	3	5				2.5	
2.20	CPR, 1557A	2	4	3	1	3	3	4	3	1	4	3	4	2	5	1	5	1	5	1	4	2	1	3	3	4	4	1				2.9	
2.21	Subord Trans	2	4	5	2	3	2	5	2	1	1	2	4	1	3	4	1	3	3	5	3	1	3	1	2	3	4	1				2.6	
2.22	MIS	2	3	3	3	3	2	5	4	1	4	2	4	1	4	1	3	2	4	5	3	1	4	1	2	2	4	1				2.7	
2.23	REA	4	3	1	5	4	3	5	5	1	5	4	4	3	3	1	5	3	4	3	2	2	4	5	3	4	5	4				3.5	
2.24	Claims	5	4	3	5	4	3	5	5	4	3	3	4	4	4	1	5	2	4	4	2	2	4	5	3	4	5	4				3.7	
2.25	Disputed Claims	5	4	3	5	3	3	5	5	4	3	3	4	4	4	1	2	3	3	2	2	4	5	2	3	5	4				3.4		
2.26	ADR	3	4	3	1	3	3	3	4	1	3	2	3	4	3	1	1	1	2	4	3	1	4	5	2	3	5	1				2.7	
2.27	Court Appeal	2	4	1	1	3	2	2	3	1	3	2	2	3	1	4	1	1	4	2	2	1	3	1	2	3	3	1				2.1	
2.28	VECP	2	4	5	3	3	3	2	4	3	3	4	4	3	1	1	3	3	3	1	2	2	4	3	2	4	3	4				2.9	
2.29	Volunt Refunds	3	3	1	1	3	2	3	4	3	3	2	2	2	1	1	1	3	3	2	1	1	2	1	2	3	2	1				2.1	
2.30	T for C	3	5	1	4	3	5	4	3	2	3	4	4	3	3	1	5	3	3	5	1	2	4	3	2	4	3	5				3.3	
2.31	T for D	3	5	1	2	3	5	4	3	2	3	4	4	3	3	1	5	3	4	2	1	2	4	3	2	4	3	5				3.1	
	Depot Competition	-	-	-	-	-	-	-	-	-	-	-	-	5	2	1	1	1	5	3	1	1	1	1	1	2	3	2	1				1.9
	Pactfinding	-	-	-	-	-	-	-	-	-	-	-	-	5	3	3	4	3	4	4	2	1	5	2	5	3	3	4	5				3.5
	Analysis of Tech Input	-	-	-	-	-	-	-	-	-	-	-	-	5	4	3	4	5	4	5	5	1	3	4	5	3	3	5	3				3.9
	Analysis of DCAA Input	-	-	-	-	-	-	-	-	-	-	-	-	5	4	5	4	5	4	5	2	1	3	4	5	3	3	5	3				3.8
	Source Selection	-	-	-	-	-	-	-	-	-	-	-	-	5	4	5	1	1	5	4	1	1	5	4	5	3	3	5	5				3.6
	PMS Pricing Support	-	-	-	-	-	-	-	-	-	-	-	-	3	3	5	1	1	2	3	4	1	1	3	3	2	3	3	1				2.4



Appendix D
Initial Expert Questionnaire
DEPARTMENT OF THE AIR FORCE
AIR UNIVERSITY
AIR FORCE INSTITUTE OF TECHNOLOGY

30 December 1992

FROM: AFIT/LSQ (J. Daneman DSN 785-8410)
2950 P Street
WPAFB OH 45433-7765

SUBJECT: Executive Pricing Course Questionnaire #1

TO: [addrescode] ([firstname] [lastname] [commphone])

Thank you for agreeing to help reorient the Executive Pricing Course which is required for APDP Level III certification for price analysts. The course was originally designed for journeyman analysts and needs to be rewritten to address issues that are more pertinent to pricing managers and executives.

Two AFIT graduate students, Mike Grove and Eddie Upshaw, are developing a method to update the course which relies on the expertise of you and five other experts in the field. With your help, we hope to reach a consensus regarding the topics and subtopics that should be covered in the course. Each expert will be sent several brief questionnaires, each narrowing and prioritizing topics and subtopics until a consensus is reached.

While any change to this course is subject to approval by the Defense Acquisition University, it is hoped this research will serve as the basis for a rewrite of the course and as the basis for a similar course to be taught in AFIT's graduate program. The graduate students doing the "footwork" for this research will base their thesis upon the research effort.

The initial effort consists of your responses on the attached questionnaire. Once we have received and reviewed all the responses, another updated questionnaire will be forwarded to you. If you have any questions, you can contact me at DSN 785-8410.

Jeff Daneman, Course Director
Air Force Institute of
Technology

2 Atch
1. Questionnaire
2. Return Envelope

CON 331 (WQMT 540) -- QUESTIONNAIRE

Advanced Contract Pricing, WQMT 540, is an executive level pricing course required for APDP level 3 certification. WQMT 540 was originally designed to provide "journeyman" and "master" price analysts quantitative techniques necessary for working the more complex cases encountered. As such the current course content does not address areas that may be of more value to the pricing manager or executive. Accordingly, this questionnaire seeks to ascertain those topics you consider more helpful to the pricing manager or executive.

Please provide the information requested below. Mail to:

DEPARTMENT OF THE AIR FORCE
AIR FORCE INSTITUTE OF TECHNOLOGY/LSQ
Attn: JEFF DANEMAN
2950 P STREET
WRIGHT-PATTERSON AFB OH 45433-7765

Thank you for your time and assistance.

Background information:

- 1.1 Current position: _____
- 1.2 Months in current position: _____
- 1.3 Grade or Rank: _____
- 1.4 Years of experience at indicated supervisory/executive level:

Not a supervisor: _____

First level: _____ years

Second level: _____ years

Third level: _____ years

Staff: _____ years Where: _____

Listed on the following pages are several topics. For each please indicate the need for that topic to be covered, from a low of 1 to a high of 5. With any topic your comments are solicited.

TOPIC	NEED				
	Low				High
2.1 Deferred Compensation	1	2	3	4	5
2.2 Uncompensated Overtime	1	2	3	4	5
2.3 Estimates vs Actuals	1	2	3	4	5
2.4 Incentive Arrangements	1	2	3	4	5
2.5 Depreciation	1	2	3	4	5
2.6 Evaluation of Bill of Materials	1	2	3	4	5
2.7 Lease vs Buy Decisions	1	2	3	4	5
2.8 Overhead (Unallowables)	1	2	3	4	5
2.9 Estimating	1	2	3	4	5
2.10 Warranties	1	2	3	4	5
2.11 Cost Accounting Standards	1	2	3	4	5
2.12 Ethical Settlements in Negotiations	1	2	3	4	5
2.13 Current and Pending Laws, Court Cases, and Regulations	1	2	3	4	5
2.14 Ethical Conduct	1	2	3	4	5
2.15 Defective Pricing	1	2	3	4	5
2.16 Defense Base Operating Fund	1	2	3	4	5
2.17 Statistical Tools for Pricing	1	2	3	4	5
2.18 Acquisition Professional Development Program	1	2	3	4	5
2.19 Fundamentals of Contract Theory (for those with little buying experience)	1	2	3	4	5
2.20 Impact and Cost of C/SCSC (CPR), C/SSR, Mil Std 1567A, etc.	1	2	3	4	5
2.21 Establishing a Training Program for Subordinates	1	2	3	4	5
2.22 Available Management Information Systems	1	2	3	4	5
2.23 Requests for Equitable Adjustment	1	2	3	4	5
2.24 Claims	1	2	3	4	5

TOPIC	NEED				
	Low				High
2.25 Disputed Claims	1	2	3	4	5
2.26 Alternative Disputes Resolution	1	2	3	4	5
2.27 Court Appearances	1	2	3	4	5
2.28 Value Engineering Change Proposals	1	2	3	4	5
2.29 Voluntary Refunds	1	2	3	4	5
2.30 Termination for Convenience	1	2	3	4	5
2.31 Termination for Default	1	2	3	4	5
2.32 Depot Competition	1	2	3	4	5
2.33 Factfinding	1	2	3	4	5
2.34 Analysis of Technical Reports/Input	1	2	3	4	5
2.35 Analysis of Audit Reports/Input	1	2	3	4	5
2.36 Source Selection Pricing Support	1	2	3	4	5
2.37 Foreign Military Sales Pricing Support	1	2	3	4	5

IN THE FOLLOWING SPACES, LIST ANY ADDITIONAL TOPICS YOU BELIEVE SHOULD BE CONSIDERED. FOR EACH, PLEASE INDICATE THE LEVEL OF NEED.

3.1	1	2	3	4	5
3.2	1	2	3	4	5
3.3	1	2	3	4	5
3.4	1	2	3	4	5
3.5	1	2	3	4	5
3.6	1	2	3	4	5

Appendix E

Initial Expert Questionnaire Results

		Raw Data Scores					Frequency					
Topics							1	2	3	4	5	
3.12	Ethical Negot	5	5	4	3	5	5	0	0	1	1	4
3.13	Laws, Cases	4	5	3	5	5	4	0	0	1	2	3
3.14	Ethical Conduct	5	5	4	3	5	4	0	0	1	2	3
3.8	O/H (Unallow)	4	4	3	1	5	5	1	0	1	2	2
3.9	Estimating	4	2	5	1	5	4	1	1	0	2	2
Depot	Competition	4	5	4	5	1	1	2	0	0	2	2
3.19	Contract Basics	2	5	3	5	4	4	0	1	1	2	2
3.4	Incentive Arrang	4	4	4	4	4	5	0	0	0	5	1
3.20	CPR, 1557A	4	5	3	4	4	2	0	1	1	3	1
3.21	Subord Train	4	4	4	4	4	4	0	0	0	6	0
Factfinding		3	2	5	1	5	5	1	1	1	0	3
3.11	CAS	4	4	2	1	5	3	1	1	1	2	1
3.3	Est vs Act	3	3	4	1	5	4	1	0	2	2	1
3.23	REA	4	4	3	1	2	5	1	1	1	2	1
Source Selection		3	4	4	4	3	3	0	0	3	3	0
3.24	Claims	4	4	3	1	2	4	1	1	1	3	0
3.26	ADR	3	5	2	1	3	3	1	1	3	0	1
3.15	Defective Price	3	5	3	1	3	4	1	0	3	1	1
FMS Pricing Support		3	4	3	1	3	5	1	0	3	1	1
3.6	Eval of BOM	2	3	3	1	3	3	1	1	4	0	0
3.17	Stat Tools	3	3	4	2	4	2	0	2	2	2	0
3.27	Court Appear	3	4	2	1	4	1	2	1	1	2	0
3.5	Depreciation	3	3	2	1	3	4	1	1	3	1	0
3.10	Warranties	3	3	3	1	1	3	2	0	4	0	0
3.25	Disputed Claims	3	4	2	1	3	2	1	2	2	1	0
3.22	MIS	3	4	3	3	3	2	0	1	4	1	0
3.1	Deferred Comp	4	3	2	1	4	1	2	1	1	2	0
3.2	Uncomp O/T	4	5	2	1	1	1	3	1	0	1	1
3.31	T for D	3	2	2	1	3	1	2	2	2	0	0
3.29	Volunt Refunds	4	4	2	1	2	1	2	2	0	2	0
3.16	DBOF	4	2	3	1	1	1	3	1	1	1	0
3.28	VECP	3	3	2	1	2	1	2	2	2	0	0
3.30	T for C	3	2	2	1	3	1	2	2	2	0	0
3.7	Lease vs Buy	3	2	2	1	2	4	1	3	1	1	0



Appendix F
Second Expert Questionnaire
DEPARTMENT OF THE AIR FORCE
AIR UNIVERSITY
AIR FORCE INSTITUTE OF TECHNOLOGY

FROM: AFIT/LSQ (J. Daneman DSN 785-8410)
2950 P Street
WPAFB OH 45433-7765

SUBJECT: Executive Pricing Course Questionnaire #1

TO: [addrescode] ([firstname] [lastname] [commphone])

Thank you for responding to the first questionnaire designed to update the "Executive Cost and Price Analysis" course. The responses were tallied and those topics receiving a rating of three or less from 50% of the expert panel have been dropped from further consideration. The remaining sixteen topics are listed on the enclosed questionnaire in the order of preference, from highest to lowest, based upon a mean of the ratings assigned by the panel. Also listed are nine additional topics which were suggested by either yourself or other panel members.

Please rank all the topics listed in the questionnaire from one to twenty-five, with one being the most needed, two being second-most needed and so on down, with twenty-fifth being the least needed topic. Afterwards, please list the subtopics and points of emphasis you feel should be included in the classroom discussions for at least the five topics you consider most important.

Delays in the pouch mail system added about four weeks to the time required for delivery of the first questionnaire. To speed things up, franked return envelopes are enclosed for your use. Please ensure they are delivered through the U. S. Postal System. If possible, please respond by 31 Mar 93.

If a third iteration is necessary, you should receive a questionnaire, which will be similar to this one, during the first week of April. If a third iteration is not necessary, you will be sent a summary of the anonymous responses provided by all the panel members. If you have any questions, you can contact me at DSN 785-8410.

Jeff Daneman, Course Director
Air Force Institute of
Technology

2 Atch
1. Questionnaire
2. Return Envelope

Rank the topics listed below from 1 to 25.

<u>RANK</u>	<u>TOPIC</u>
___	Ethical Settlements in Negotiations
___	Current and Pending Laws, Court Cases, and Regulations
___	Ethical Conduct
___	Incentive Arrangements
___	Establishing a Training Program for Subordinates
___	Fundamentals of Contract Theory (for those with little buying experience)
___	Overhead (Unallowables)
___	Impact and Cost of C/SCSC, CPR, C/SSR, Mil Std 1567A, etc.
___	Source Selection Pricing Support
___	Estimating
___	Factfinding
___	Estimates vs Actuals
___	Debot Competition
___	Cost Accounting Standards
___	Requests for Equitable Adjustments
___	Claims

Suggested Topics from First Questionnaire

___	Adequate Price Competition for Other than FFP Arrangements
___	Contractor Financing
___	Cost Monitoring Reviews
___	DoD Profit Policy
___	Eichleay Formula for Unabsorbed Overhead
___	Pricing of Commercial Items, Nondevelopmental Items
___	Program Management/Pricing Conflict Resolution
___	Roles and Responsibilities of Price Analysts in Negotiations
___	Specialized Cost Reviews, e.g., Should Cost Reviews or Subcontract Pricing Reviews

List the subtopics and points of emphasis for at least the five most important topics.

Topic 1

Topic 2

Topic 3

Topic 4

Topic 5

Topic ____

Topic ____

Topic ____

Topic ____

Topic ____

Appendix G

Second Expert Questionnaire Results

<u>Topic</u>	<u>Expert</u>					
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>
Ethical Negotiations	18	3	24	16	1	3
Current Laws and Cases	9	2	20	13	2	4
Ethical Conduct	19	4	23	6	3	5
Incentive Arrangements	7	10	9	1	4	9
Establishing A Training Program for Subordinates	13	5	10	15	5	14
Fundamentals of Contract Theory	8	24	15	5	6	24
Overhead (Unallowables)	14	18	5	21	7	13
Impact/Cost of CPR, Mil Std 1567A, etc	21	13	18	14	20	23
Source Selection	2	15	7	4	17	15
Estimating	11	19	1	12	10	21
Factfinding	12	20	2	2	11	20
Estimates vs Actuals	10	21	4	22	15	22
Depot Competition	1	14	14	7	25	11
Cost Accounting Standards	15	23	6	11	16	12
Requests for Equitable Adjustment	4	22	16	3	22	6
Claims	6	17	17	8	21	7
Adequate Price Competition for Other than FFP	3	11	8	17	19	10
Contractor Financing	25	12	25	20	12	3
Cost Monitoring Reviews	24	25	13	18	13	23
DoD Profit Policy	20	8	22	19	14	13
Eichleay Formula for Unabsorbed Overhead	5	16	21	23	24	17
Pricing of Commercial and Non- developmental Items	16	6	11	9	23	19
Program Management/Pricing Conflict Resolution	22	1	19	24	18	1
Roles/Responsibilities of the Price Analyst in Negotiations	17	7	3	25	9	2
Specialized Cost Reviews	23	9	12	10	8	18

Appendix G (Continued)

Second Expert Questionnaire Results

Comments:

Program Management/Pricing Conflict Resolution

- Program management's mission
- Pricing's mission
- Resolution of the conflict

Roles/Responsibilities of the Analyst in Negotiations

- Role of Contracting Officer
- Role of the Price Analyst
- Role of the field agencies
- Role of other technical support

Ethical Settlements in Negotiations

- What is a settlement?
- What ethics are involved in negotiations?
- Do laws protect the Government from poor ethics on the contractor's part?
- Equity for both Government and contractor

Current Laws, Court Cases, Regulations

- FAR, DFARS
- ASBCA cases

Ethical Conduct

- Combine with "Ethical Negotiations"
- Truth in Negotiations Act
- Disclosure of unallowable costs

Incentive Arrangements

- Types of contracts
- Performance incentives
- Tradeoffs

Establishing a Training Program for Subordinates

- Need for technical training in such areas as price/cost analysis, cost estimating, contract administration, cost accounting standards, overhead analysis, etc.

Factfinding

- What to look for
- How to conduct meetings

Appendix G (Continued)

Second Expert Questionnaire Results

Requests for Equitable Adjustments

- Rules for establishing price
- Contract terms, e.g. Not-To-Exceed, Changes Clause
- Differences between equitable adjustment and repricing
- How to achieve "leave them as you found them" while complying with TINA
- Form in which proposal should be submitted

Source Selection

- Methods of evaluation
- Rules
- How to perform cost realism assessment with limited, uncertified cost/price data
- Define realistic, complete, and reasonable
- How to handle uncorrected CR's

Fundamentals of Contract Theory

- Contract provisions vs price
- Laws
- Contract types

Depot Competition

- Relationship between Cost Comparability Handbook and Cost Accounting Standards
- How to perform meaningful comparisons of public and private proposals
- Overview of differences in costing practices among the services

Adequate Price Competition for Other than FFP

- How to structure evaluation criteria to obtain apples to apples comparison
- Examples of contract arrangements

Eichleay Formula for Unabsorbed Overhead

- Case law history
- Premise upon which entitlement is established
- Formula for calculation
- Burden of proof
- Allowability/unallowability of variable and semi-variable costs in overhead pool

Appendix H

The Problem of m Rankings: An Intuitive Explanation

Maurice G. Kendall developed and explained this method of measuring the strength of agreement or "coefficient of concordance" among a number of rankings of a list of items. The following is an intuitive explanation of what is being measured and its usefulness.

The coefficient of concordance (W) is determined by the ratio of the actual deviations from the mean of the rankings to the maximum possible deviations from the mean of the rankings ($\text{actual}/\text{maximum}$). Accordingly, a "1" would indicate perfect agreement, while a "0" would indicate no or minimal agreement; a fraction approaching "1" indicates an increasing degree of agreement. An adjusted coefficient of concordance follows the Chi-squared distribution; hence, the probability of a particular W occurring by random chance can be determined. The formulae referenced in Chapter IV are displayed below. $MS = m(n+1)/2$ where MS is the mean of the sums of the individual rankings for each item, m is the number of rankings (or in this thesis, the number of experts), and n is the number of items being ranked. $S = \sum [MS - \sum_i]^2$ where S is the sum of the squares of the differences between MS and \sum_i , and \sum_i is the sum of the rankings of each individual item. $W = [12S]/[m^2(n^3-n)]$ where W is the coefficient of concordance. $X_2^2 = m(n-1)W$, $v = n-1$ where X^2 = Chi-squared and v = the

degrees of freedom. Chi-squared is the distribution used to determine the probability of a particular W occurring.

Outlined below is a simplified illustration of the concept involved in Kendall's coefficient of concordance. Assume two individuals have ranked a list of five items as shown in Table H.1.

Table H.1
Example of Perfect Agreement

Item	A	B	C	D	E						
Billy	5	4	3	2	1						
Shawn	<u>5</u>	<u>4</u>	<u>3</u>	<u>2</u>	<u>1</u>						
Sum	10	8	6	4	2						
MS	<u>6</u>	<u>6</u>	<u>6</u>	<u>6</u>	<u>6</u>						
S	16	+	4	+	0	+	4	+	16	=	40

In the above case Billy and Shawn agree perfectly. The mean of the sum of the rankings is six $(10+8+6+4+2/5)$ and the sum of the squares of the differences between the mean and the sum of the ranks of each item is maximized at forty

$[(10-6)^2 + (8-6)^2 + (6-6)^2 + (4-6)^2 + (2-6)^2]$. Hence, the coefficient of concordance W is one $(40/40)$.

Now consider the example in Table H.2 where the two individuals have minimal agreement.

Table H.2
Example of Minimal Agreement

Item	A	B	C	D	E						
Billy	1	2	3	4	5						
Shawn	<u>5</u>	<u>4</u>	<u>3</u>	<u>2</u>	<u>1</u>						
Sum	6	6	6	6	6						
MS	<u>6</u>	<u>6</u>	<u>6</u>	<u>6</u>	<u>6</u>						
S	0	+	0	+	0	+	0	+	0	=	0

In this case the Billy and Shawn have minimal agreement. The mean of the sum of the rankings is still six, but in this case the sum of the rankings of each item is also six. Hence, the sum of the squares of the differences between the mean and the sum of the ranks of each item is zero and the coefficient of concordance W is zero $(0/40)$.

As one can see, perfect agreement results in a coefficient of concordance of one, while the lack of agreement results in a coefficient of concordance of zero.



Appendix I
Executive Pricing Course Summary Letter

DEPARTMENT OF THE AIR FORCE

AIR UNIVERSITY
AIR FORCE INSTITUTE OF TECHNOLOGY

FROM: AFIT/LSQ (J. Daneman DSN 785-7777 ext. 3261)
2950 P Street
WPAFB OH 45433-7765

SUBJECT: Executive Pricing Course Survey Summary

TO: [addrescode] ([firstname] [lastname] [commphone])

Thank you for assisting in the survey designed to update the "Executive Cost and Price Analysis" course. Your responses, along with those of the other respondents, have been tallied and ranked, and the comments summarized. The results are enclosed. I recognize the very busy schedule you have and do appreciate very much the time and effort you have made in our behalf.

I am currently in the process of submitting a revised course curriculum, based upon this research, to the Defense Acquisition University for their review and approval. A similar course to be taught in AFIT's graduate program is also planned. We hope the resultant courses will more adequately address the needs of the pricing managers and executives who are required to take the course.

If you have any questions, you can contact me at DSN 785-7777 ext. 3261.

Jeff Daneman, Course Director
Air Force Institute of
Technology

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Summary of Survey Results

Summary of Survey Results

In rank order, from most desirable to least desirable, the recommended topics for the Executive Pricing Course are:

- | | |
|--|--|
| 1. Incentive Arrangements | 13. Claims |
| 2. Current and Pending Laws, Court Cases, Regulations | 14. Overhead (Unallowables) |
| 3. Ethical Conduct | 15. Specialized Reviews, e.g., Should Cost |
| 4. Source Selection Pricing Support | 16. Fundamentals of Contract Theory |
| 5. Establishing a Training Program for Subcontractors | 17. Cost Accounting Standards |
| 6. Roles and Responsibilities of Pricers in Negotiations | 18. Pricing of Commercial, Nondevelopmental Items |
| 7. Ethical Settlements in Negotiations | 19. Program Management/Pricing Conflict Resolution |
| 8. Factfinding | 20. Estimates vs Actuals |
| 9. Adequate Price Competition for Other than FFP Contracts | 21. DoD Profit Policy |
| 10. Depot Competition | 22. Contractor Financing |
| 11. Requests for Equitable Adjustments | 23. Eichenlaub Formula for Unabsorbed Overhead |
| 12. Estimating | 24. Impact and Cost of O/SOSO, OPR, O/SSR, etc. |
| | 25. Cost Monitoring Reviews |

Comments/Subtopics on Top Ten Topics

This section provides a discussion and a list of recommended subtopics for the higher ranked topics. The term "polarized" is used and can be defined as follows: A "polarized" topic is said to exist whenever at least two respondents ranked the topic in the first quartile and at least two ranked it in the last quartile. This polarization of opinions on some issues is expected and reflects valid observations or needs based upon the respondents' locations and/or experiences. This polarization does not affect the

overall ranking of the topics, but does affect the apparent strength of the agreement or degree of consensus. Without adjusting for the polarized topics, the data reflects a 67% level of confidence that the ranking reflects a consensus. After adjusting for four polarized issues, the level of confidence rises to 88%, which is considered adequate for decisions regarding issues as general as education.

Topic 1 The points of emphasis or subtopics recommended for the discussion of incentive arrangements included reviews of cost and fixed price incentive contracts, performance incentives, working with multiple incentives, and possible trade-offs.

Topic 2 A review of current and pending laws, regulations, and board or court cases, including changes in the Federal Acquisition Regulations and Department of Defense Federal Acquisition Regulation Supplement, should emphasize new trends and developments as opposed to administrative changes.

Topic 3 (also #7) The comments regarding ethical conduct were very closely related to comments relating to ethical settlements in negotiations. Accordingly, the subtopics and points of emphasis will be listed together. No comments referenced Air Force Regulation 30-30 or similar ethics regulations or credos. The subtopics include concepts such

as fair and reasonable settlements and open communications. Specifically, the listed subtopics were equity for both government and contractor, what constitutes a settlement, what ethics are involved in negotiations, how to elicit compliance with the Truth in Negotiations Act and the disclosure of unallowable costs, and "does 'law' protect the government from poor ethics on contractor's part?".

Topic 4 The topic of pricing support for source selection should include the following subtopics: methods of evaluation; defining realistic, complete, and reasonable; how to perform cost realism assessments with limited, uncertified cost and pricing data; how to handle uncorrected Deficiency Reports (DR's); and the rules of source selection.

Topic 5 To establishing a training program for subordinates. technical training in such areas as price/cost analysis, cost estimating, contract administration, cost accounting standards, overhead analysis, and so forth must be addressed.

Topics 6 (also #19) The topic of roles and responsibilities of pricers in negotiations is closely related to the topic which ranked nineteenth overall, program management/pricing conflict resolution, and which is polarized. What is being sought is a clearer definition of the mission and role of the pricer, the contracting officer, the auditor, other technical

support personnel, and of the program manager. Those roles are defined by each particular office's organizational structure and cultural norms. For example, one purchasing center reportedly exhibits conflict between the program managers and the pricers, whereas such conflicts seldom if ever occur at other purchasing centers. The norms of the latter offices have more clearly defined roles for each function. In addition to cleaner definitions, techniques are needed to resolve conflicts whenever they occur.

Topic 7 See topic #3.

Topic 8 There were polarized views regarding whether the topic of factfinding should be considered for an executive pricing course. On the "no" side are those who feel that either the pricer is just one of a factfinding team (not the leader) or that factfinding is a basic task already mastered by all who are required to take the course. On the "yes" side are those who feel that the pricer is the key player in factfinding and that inadequate attention has been given to ensuring that all elements of the statement of work are addressed and appropriately priced in the contractor's proposals. Accordingly, the recommended subtopics are what to look for and how to conduct the meetings.

Topic 9 Obtaining adequate price competition for other than firm fixed price contracts requires structuring the evaluation criteria to obtain an "apples-to-apples" comparison. Requested are examples for fixed price incentive firm, cost plus incentive fee, cost plus fixed fee, and time and material contract types.

Topic 10. Some pricing offices have become involved in the evaluation of competitive proposals submitted by various depots and, sometimes, private entities. To evaluate the proposals, a better understanding of the relationship between the Cost Comparability Handbook and the Cost Accounting Standards, instruction on how to perform meaningful comparisons of public and private proposals, and an overview of differences in costing practices among the services are needed.

Other Polarized Opinions

The eighth and nineteenth topics, discussed above, are polarized. The eleventh topic, requests for equitable adjustments, was another topic where polarized opinions were exhibited. In smaller supply contracts such requests usually involve simpler issues which are easily resolved. In major acquisitions requests for equitable adjustments may be quite

complex with many issues, and may be an attempt to reprice the contract after a "buy-in." Accordingly, the recommended subtopics include how to differentiate between equitable adjustments and repricing, and how to interpret and apply various contract provisions such as the Changes Clause or a Not-to-Exceed.

The sixteenth topic, the fundamentals of contract theory, was also a polarized topic. The fundamentals of contract theory would address the basics of contracting for those price analysts who have had no contracting experience. Areas of concern are contract provisions versus price alone, applicable laws, and the differences among contract types.

Other Comments

The twenty-third topic, the Eichleay formula for unabsorbed overhead, was ranked in the top five by at least one individual and, therefore, received comments. The Eichleay formula for unabsorbed overhead would require not only coverage of the technique itself, but also the case law history and the premise upon which entitlement is based.

Appendix J

Description of Topics

Incentive Arrangements. This topic involves two general areas. The first is technical: How to price incentive contracts involving multiple, conflicting incentives, e.g., increase performance and decreased cost, or similar complex arrangements. The second area involves identifying and addressing those areas that truly incentivise the contractor, those areas that are of greatest to the contractor such as positive long-term relationships, internal politics, or the reduction of risk.

Current and Pending Laws, Court Cases, and Regulations. This review should emphasize new trends and developments as opposed to administrative or procedural changes.

Ethical Conduct and Ethical Settlements in Negotiations. The topic ethical conduct is very closely related to the topic ethical settlements in negotiations. Accordingly, they will be described together. Notably, the topics do not refer to Air Force Regulation 30-30 or similar ethics regulations or credos. Instead, they refer to concepts such as fair and reasonable settlements, open communications, and equity for both government and contractor.

Source Selection Pricing Support. Pricing support for source selection should involves determining that proposed costs are realistic (which requires a comparison of the

statement of work, work breakout structure, and cost buildup), complete, and reasonable; at times involves using limited, uncertified cost and pricing data; and has limited and highly structured communication mechanisms.

Establishing a Training Program for Subordinates. A training program for pricers should interrelate on-the-job training, the required professional continuing education courses, and other formal courses and informal training opportunities that are designed to enhance the individuals overall capabilities and groom them for management opportunities. To establishing a training program for subordinates, technical training in such areas as price/cost analysis, cost estimating, contract administration, cost accounting standards, overhead analysis, and so forth must be addressed.

The Roles and Responsibilities of Pricers in Negotiations and Program Management/Pricing Conflict Resolution. What is needed in a discussion of these topics is a clearer definition of the mission and role of the pricer, the contracting officer, the auditor, other technical support personnel, and of the program manager. Those roles are defined by each particular office's organizational structure and cultural norms. For example, one purchasing center reportedly exhibits conflict between the program managers and the pricers, whereas such conflicts seldom if ever occur at other purchasing centers. The norms of the latter offices have more clearly defined roles for each function. In addition to

clearer definitions, techniques are needed to resolve conflicts whenever they occur.

Factfinding. In some organizations the pricer is the key player in factfinding and adequate attention must be given to ensure that all elements of the statement of work are addressed and appropriately priced in the contractor's proposals. Pricers need to know what to look for and how to conduct the meetings.

Adequate Price Competition for Other than Firm Fixed Price Contracts. In some organizations pricers are tasked with establishing guidelines for structuring the evaluation criteria for determining the winner in price competitions involving fixed price incentive firm, cost plus incentive fee, cost plus fixed fee, and time and material contract types. Developing criteria that yields an "apples to apples" comparison is at times very difficult.

Depot Competition. Some pricing offices have become involved in the evaluation of competitive proposals submitted by various depots and, sometimes, private entities. To evaluate the proposals, a better understanding of the relationship between the Cost Comparability Handbook and the Cost Accounting Standards, instruction on how to perform meaningful comparisons of public and private proposals, and an overview of differences in costing practices among the services are needed.

Requests for Equitable Adjustments. In smaller supply contracts such requests usually involve simpler issues which are easily resolved. In major acquisitions requests for equitable adjustments may be quite complex with many issues, and may be an attempt to reprice the contract after a "buy-in." Accordingly, instruction would include how to differentiate between equitable adjustments and repricing, and how to interpret and apply various contract provisions such as the Changes Clause or a Not-to-Exceed.

Fundamentals of Contract Theory. The fundamentals of contract theory would address the basics of contracting for those price analysts who have had no contracting experience.

The Eichleay Formula for Unabsorbed Overhead. The Eichleay formula for unabsorbed overhead is occasionally used in cases that is in litigation. Coverage would include the technique itself, the case law history, and the premise upon which entitlement is based.

Estimating. Usually pricers are not involved in developing estimates, rather reviewing estimates made by others. Occasionally, such as in source selection, estimates by the pricer are required. Accordingly, the techniques of establishing realistic and reasonable estimates are needed.

Claims. Pricing a claim is similar to other pricing action except claims occasionally require consideration for burden of proof. The policy stated in the Federal Acquisition Regulations is that claims should be negotiated if

possible. Accordingly, some pricers need to learn to see the big picture and the contractor's point of view, and have less emphasis on individual elements of cost.

Overhead (Unallowables). This topic involves the review of FAR part 30, "Cost accounting standards" and FAR part 31. Specifically addressed is how to identify and account for unallowable overhead costs.

Specialized Reviews, e.g., Should Cost. This topic would review the principles and techniques involved in should cost, could cost, pre-award, and similar reviews.

Cost Accounting Standards. This is a more detailed review of the cost accounting standards published in FAR part 30 and the changes occurring as a result of the Chief Financial Officers Act of 1990 and similar legislation.

Pricing of Commercial, Nondevelopmental Items. This topic would cover techniques required to ensure that prices paid for commercial, nondevelopmental items are fair and reasonable. Related to this topic is how to perform a value analysis.

Estimates vs Actuals. This topic covers techniques of comparing contractor's estimates to incurred costs for the purpose of negotiating an estimate to complete. Involved is learning how to work with less than ideal data.

DoD Profit Policy. This topic would deal with current profit policy, the intent of congress, and the application of policy to various contract types.

Contractor Financing. This topic involves a review of the various types of contractor financing, its impact on contract type and profit, and its impact on special cases such as contract in litigation.

Impact and Cost of C/SCSC, CPR, C/SSR, etc. These types of reviews are often required but are not priced separately. Consequently we do not understand their impact on price or upon the contractor's regular information reporting system. This topic would discuss their impact and viable alternative tailored requirements.

Cost Monitoring Reviews. This topic concentrates upon the impact of and techniques required to accomplished cost reviews.

Bibliography

Air Force Institute of Technology (AFIT). AFIT Catalog 1989-1991, Dayton OH: AFIT, 1989.

Baylock, Bruce K. and Loren P. Rees. "Cognitive Style and the Usefulness of Information," Decision Sciences, 15: 74-91 (Winter 1984).

Braun, Alexander. "Assessing Supervisory Training Needs and Evaluating Effectiveness," Training and Development Journal, 33: 3-10 (February 1979).

Brown, Kirby R. Validation of the Field Grade Multifunctional Logisticians Educational Model. Graduate Paper. Florida Institute of Technology, Fort Lee, VA, 1990 (DOCID LD 085586A).

Carlton, Jon R. The Backlog in Professional Continuing Education. Air University sponsored Report, Center for Professional Development, Professional Military Comptroller Course, May 1990 (DOCID LD076804A).

Crumbie, Betty A. and Dave Willis. Pricing Guide for Air Force Operational Contracting: Letter Report. Report. Air Force Logistics Management Center, Gunter AFS AL, October 1990 (DOCID LD 083373A).

Daneman, Jeff. Unpublished "End of Course Critique" completed by each student participating in WQMT 550, for courses conducted in 1992 and 1987. Critiques were submitted in November 1992.

----- Course Director for CON 301, AFIT WPAFB OH. Personal interview. 4 March 1993.

Department of Defense (DOD). Career Development Program for Acquisition Personnel. DOD Directive 5000.52M. Washington: GPO, November 1991.

Floyd, Gregory L. Professional Designation in Cost Analysis: Stepping Stone to Better Analysis or a Box to be Checked?, Report. Air University, Center for Professional Development, Professional Military Comptroller Course, September 1990 (DOCID 082515A).

Joint Financial Management Improvement Program (JFMIP). Continuing Professional Education: Federal GS-510 Accountant's Report, Report, December 1990 (DOCID LD 083748A).

Kendall, Maurice G. "The Problem of m Rankings," in Rank Correlation Methods (Second Edition). New York: Hafner Publishing Company, 1955.

Koval, Erwin S., Ed. "Continuing Education is a Going, Growing Concern," Management Accounting, 53: 56-57, 63 (November 1971).

Martin, Jeanette S. and Lillian H. Chaney. "Determination of Content for a Collegiate Course in Interculture Business Communication by Three Delphi Panels," Journal of Business Communication, 29 No. 3: 267-283 (1993).

Morgan, David R., John P. Pelissero, and Robert E. England. "Urban Planning: Using a Delphi as a Decision-Making Aid," Public Administration Review, 39: 380-384 (July/August 1979).

National Archives and Records Administration (48 CFR). Code of Federal Regulations: 48. Washington: GPO, 1990.

Olshfski, Dorothy and Alma Joseph. "Assessing Training Needs of Executives Using the Delphi Technique," Public Productivity and Management Review, 14 No. 3: 297-301 (Spring 1991).

Palmer, W. J. "An Integrated Program for Career Development," Personnel Journal, 51: 398-406 (June 1972).

President's Blue Ribbon Commission on Defense Management. A Formula for Action: A Report to the President on Defense Acquisition. Defense Technical Information Center, Alexandria VA, 1986 (AD-A171632).

Pursch, William C., Ph.D. Class Lecture, CMGT 552, Seminar in Contracting Management. School of Systems and Logistics. Air Force Institute of Technology, Wright Patterson AFB OH, January 1992.

Reeves, Elton T. and J. Michael Jensen. "Public Seminars and Conferences for Supervisors," Personnel Journal, 51: 346-349 (May 1972).

Rohrbaugh, John. "Improving the Quality of Group Judgement: Social Judgement Analysis and the Delphi Technique," Organizational Behavior and Human Performance, 24: 73-93 (August 1979).

Scott, Randall F. and Dick E. Simmons. "Programmer Productivity and the Delphi Technique," Datamation, 20: 71-73 (May 1974).

Tersine, Richard J. and Walter E. Riggs. "The Delphi Technique: A Long-Range Planning Tool," Business Horizons, 19: 51-56 (April 1976).

Under Secretary of Defense (Acquisition) (USD(A)). Defense Acquisition University Catalog 1992-1993. Vol 1. Alexandria: HQ DAU, 1992 (ADS-92-01-CG).

Weaver, Miles O. "Using Delphi for Curriculum Development," Training and Development Journal, 42: 13-20 (February 1988).

Zaloom, Victor A. "The Delphi Technique," Journal of Systems Management, 25: 33-34 (October 1974).

Vitae

Mr. Michael L. Grove received a high school diploma in 1980 from Tippecanoe High School, Tipp City, OH and a Bachelor of Science degree (Major: Accountancy) in 1985 from Wright State University, Dayton, OH. Since 1985 he has taken many professional continuing education courses concentrating in the contracting and pricing specialties.

Mr. Grove began his civilian career at Wright-Patterson AFB, Aeronautical Systems Division in 1980 as a Contract Price Analyst. In 1987, he changed his specialty to a Contract Negotiator. In 1990, Mr. Grove received his Contracting Officer warrant and he has proceeded to the journeyman level as a Contracting Officer.

Mr. Grove married Miss Jodi L. Lybarger in 1987. They now have one child, Nathan. Upon graduation, Mr. Grove will return to Aeronautical Systems Center as a Contracting Officer.

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Early in his career, Mr. Upshaw served as a tutor, education counselor, instructor, and project director in a series of United States Department of Education programs which provided special services for students. After accepting a position at the Oklahoma City Air Logistics Center (OC-ALC), he served as price analyst and lead negotiator in numerous multi-million dollar contract actions involving various weapon systems and other procurements. He has also negotiated the resolution of contractor claims and defective pricing issues; has participated in multi-billion dollar Foreign Military Sales programs and depot competition actions; and has designed and implemented programs to improve pricing office efficiency and effectiveness.

Mr. Upshaw married Miss Pei Sah Lee in 1976. They now have two children, Jadee and Michael. Upon graduation, Mr. Upshaw will return to OC-ALC.

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13. ABSTRACT (Maximum 200 words) The goal of this research effort was to determine recommended topics to be taught in the Air Force Institute of Technology Professional Continuing Education course CON 331 - Executive Cost and Price Analysis. This determination of course content was necessary due to the changes required by the implementation of Department of Defense Directive 5000.52-M, "Career Development Program for Acquisition Personnel." The determination was accomplished by developing a list of suggested topics and surveying a panel of six Government pricing executives, managers, and experts via the Delphi method. Kendall's Coefficient of Concordance test was utilized to determine the significance of agreement between the experts. Using this methodology, a consensus was reached on a prioritized list of 25 topics. In addition, recommendations for specific areas of study relating to a topic were received for 14 topics. The consensus list of prioritized topics and the recommended subtopics constitute our determination of content for CON 331 - Executive Cost and Price Analysis.				
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